MICROPLANNING MANUAL

MICROPLANNING MANUAL
FOR
JOINT FOREST MANAGEMENT AREAS

edited by

Bakhshish Singh
V Varalakshmi

teri
New Delhi

© Tata Energy Research Institute, 1998
ISBN 81-85419-45-0

No material in this publication can be reproduced, as presented, in any form or by any means without the prior permission of the publishers

Published by
TERI
Darbari Seth Block
Habitat Place, Lodhi Road
New Delhi – 110 003, India
Telephone (+91 11) 460 1550, 462 2246
Fax (+91 11) 462 1770, 463 2609
E-mail outreach@teri.res.in
Web site http://www.teriin.org

Printed at
Multiplexus (India)
94 B D Estate, Timarpur
Delhi - 110 054

CONTENTS

List of Figures vi

List of Photographs vi

List of Tables vi

Messages

Suresh P Prabhu

Hon'ble Minister for Environment and Forests, Government of India vii

C P Oberai

Inspector General of Forests & Spl. Secretary to Government of India ix

Foreword xi

Preface xii

Acknowledgements xv

Abbreviations xvi

Concepts and scope of participatory microplanning 1

Tools and requisites for participatory microplanning 7

Processes and format for preparation of microplan 53

Appendices 72

References 103

Further reading 105

Index 108

List of Figures

Figure 1 Salient characteristics of a microplan *5*
Figure 2 Line transect walk model in village Nandpur, Haryana Shivaliks *16*
Figure 3 Land-use transect, village Ghata Sher, Aravalli Hills *17*
Figure 4 Time line of events affecting land-use in Dupinga, Philippines *19*
Figure 5 Calendar for forest product collection and agricultural activities (seasonal) in village Ghodbar, Gujarat *20*
Figure 6 Map of village Damdama, Morni, Pinjore Division *29*
Figure 7 Resource use map of Prempura forest seat, Haryana Shivaliks *31*
Figure 8 Command area map of Kedarpur Dam *36*
Figure 9 Layout of line transects (a) and nested quadrats (b) for vegetation survey *37*
Figure 10 Range profile of JFM areas, Lunavada Taluk, Gujarat *41*
Figure 11 Boundary demarcation map, Prempura Forest Beat, Haryana Shivaliks *49*
Figure 12 Successive steps for participatory planning, implementation and evaluation *50*
Figure 13 A development cycle *51*
Figure 14 Manual geographic information system (GIS) mapping tools *65*
Figure 15 HRMS area map: Nada HRMS *66*
Figure 16 An overview of inter-departmental coordination system in Harda, Madhya Pradesh *67*

List of Photographs

A village elder explaining the Resource Map prepared by villagers in a PRA exercise in Aravalli Hills *24*

Fodder grass is very useful NTFP for village communities. It should be stall fed and not subjected to open grazing *25*

Forest condition map *32*

Soil erosion map prepared in a participatory baseline survey for microplanning *34*

Management map *35*

List of Tables

Table 1 Basic demographics of village Nada, Pinjore Division, Haryana *27*
Table 2 Density classes for mapping of forest condition *32*
Table 3 Classification of forest based on forage condition *33*
Table 4 Classification of forest land based on intensity of soil erosion *33*
Table 5 Baseline survey data of village Rajipur, Pinjore range, 1996 *39*
Table 6 One month chart for monitoring progress in a community forestry project *51*
Table 7 Six months for those who are used to using a rating scale *51*
Table 8 Example of a priority matrix *60*

सुरेश पी. प्रभु
SURESH P. PRABHU

मंत्री
पर्यावरण एवं वन
भारत सरकार
नई दिल्ली-110003
MINISTER
ENVIRONMENT & FORESTS
GOVERNMENT OF INDIA
NEW DELHI-110003

Message

The Indian forestry sector has witnessed a major policy shift during the recent past and especially during the last decade towards a more decentralized and people-oriented forestry. The National Forest Policies have come to recognize the symbiotic relationship between people and forests. Among the new systems introduced under this regime is the Joint Forest Management (JFM) Programme, wherein the Forest Departments in different States have forged alliances with local user-communities in the protection and management of forest resources.

In order that the health of the forests is sustained while at the same time the basic forest based requirements of user-communities are met, it is very essential that plans drawn out for the development and management of forests have to be area specific. The need for integrating socio-economic and forest dependancy aspects with that of forest conditions is crucial in sustaining the JFM programme. There is growing attention towards the planning process adopted in arriving at Joint Management Plans under JFM.

I am extremely happy that the Tata Energy Research Institute (TERI) is bringing out a manual for microplanning for Joint Forest Management areas. This manual draws extensively from the vast experience that TERI and its professionals have gained while working on JFM programmes in a number of States and on other related programmes. It is this experience that renders the manual highly user-friendly and implementable. The manual is very timely when as many as 20 State Governments have issued enabling orders supporting JFM and work on microplanning is underway in a big way in most of them. I congratulate TERI for bringing out this manual which would go a long way in facilitating the microplanning process in India and also in other countries implementing JFM programmes.

(SURESH P. PRABHU)

C. P. OBERAI

सत्यमेव जयते

वन महानिरिक्षक एवं विशेष सचिव
पर्यावरण एवं वन मंत्रालय
भारत सरकार
INSPECTOR GENERAL OF FORESTS & SPECIAL SECRETARY
MINISTRY OF ENVIRONMENT & FORESTS
GOVERNMENT OF INDIA

May 20, 1998

Participatory Forest Management has provided a new dimension and direction to forest management practices in India. The involvement of user groups in forest management is vital for ensuring the sustainability of the resource generation process and in meeting the legitimate sustenance needs of the people. So far, 20 States Governments have opted for Joint Forest Management (JFM) over the past few years. At this stage, there is a need to assess the impact of this new experiment through the sharing of ideas and successes so far achieved amongst foresters and other interested groups. This will help evolve a common approach to dealing with various emerging issues in the field.

It is very heartening to note that Tata Energy Research Institute has prepared this document at the stage when JFM is poised to take a big leap forward. This publication has critically analyzed relevant aspects of the JFM process. Of particular interest to the officers of the Forest Departments is the section on micro-planning approaches in JFM areas which has been dealt within a comprehensive manner. I believe that it should help facilitate grassroot forest functionaries in the design and preparation of micro-plans for JFM areas.

This is an excellent addition to the recent publication on Joint Forest Management, and I believe that it would be useful to the foresters who are implementing JFM programmes in diffferent States, as well as to NGOs and research and training workers engaged in the JFM activies.

(C.P. OBERAI)
Inspector General of Forests & Spl.Secretary to
Government of India

पर्यावरण एवं वन मंत्रालय, सी०जी०ओ० कॉम्पलेक्स, लोदी रोड, नई दिल्ली-110003 फोन : + 91 (11) 4361509 फैक्स : + 91 (11) 4363957
Ministry of Environment & Forests, C.G.O. Complex, Lodi Road, New Delhi-110003 Tel.: + 91 (11) 4361509 Fax No. + 91 (11) 4363957

FOREWORD

The survival of forests is closely linked with the forest communities living in and around forests. The National Forest Policies of independent India enunciated in 1952 and 1988 are reflective of this symbiotic relationship, and have subsequently given birth to the Joint Forest Management (JFM) programme as an important mode for rehabilitation of degraded forests. The concept of the JFM programme represents a major breakthrough in developing an avenue for community participation in conservation and protection of forests, and, thereby, providing the key for reversing the trend of deforestation seen in recent decades in several parts of the globe.

It is imperative that JFM programmes are well planned and implemented. JFM plans need to recognize and adequately support the identity, culture, and rights of forest user communities to enable them to establish a stake in the development and management of forests. While evolving incentives to villagers for forest protection, it is extremely essential that due importance is given to the condition of the forests and the usufructs that are derived by people from JFM forest areas. All these highlight the crucial role of microplanning for such areas.

Microplanning, as applied to JFM, is a simplified process of document preparation. This document would outline the interventions required in a given forest area, that need to be undertaken jointly by the forest dependent communities and the Forest Department. It would spell out not only the forest-related inputs but also the socio-economic and livelihood patterns of the villagers.

The document also carefully examines the linkage between forest resource enhancement and the livelihood security of the people.

In this bottom-up approach, therefore, all efforts are directed towards addressing the felt needs of the people and, as far as possible, incorporating these in the final technological plan of action to be implemented. The emphasis in participatory microplanning is to devolve forest management decision-making directly to the users with the forest department providing the necessary technical advice and/or financial assistance.

TERI has been involved in JFM activities in India for more than seven years now. Apart from providing backup support to the Haryana Forest Department in implementing the state's JFM Programme, TERI professionals have contributed significantly to JFM programmes in other states like West Bengal, Himachal Pradesh, etc. The need for a manual on microplanning for JFM areas was being acutely felt and this document is an effort towards that end. The manual is a compilation of TERI's experiences, along with those of others who have contributed substantially to microplanning.

The manual details the concept of microplanning to the user, the principles that guide participatory planning, and the tools for participatory microplanning. Information essential for developing a microplan and the different processes involved are also explained. The process by which communities develop stakes in the microplans and ratify the same, as described in the manual, is of immense importance to the practitioners in the field. The manual is comprehensive and would take the user through the different stages of participatory microplanning with appropriate illustrations. It is an important contribution towards more effective planning and implementation of the JFM Programme in India and in other allied countries of the world as well.

R K Pachauri
Director, TERI

PREFACE

Participatory planning at the village level is a relatively recent concept and it has become all the more crucial for the forestry sector following the realization that without the willing and active participation of communities living in and around forests, no programme to regenerate degrading forests would succeed. The National Forest Policy of 1988 envisages people's involvement in development, conservation, protection, and management of forests. A circular issued on 1 June 1990 by the Ministry of Environment and Forests, Government of India, recommends the establishment of grass-root community institutions and preparation of working schemes in consultation with the people and local non-governmental organizations (NGOs) for the protection, treatment, and sustainable management of forests. As a follow-up of those directions, a majority of the enabling orders and resolutions issued by 20 state governments provide for preparation of microplans as a prerequisite for participatory forest management.

Since Joint Forest Management (JFM) is a new system of management partnership, the forestry staff have not only to reorient their working strategies and procedures but also have to equip themselves with new skills of working with the people and for the people. Keeping the emerging scenario in view, this manual has been designed and prepared to provide the necessary framework, guidelines, and processes needed for (i) developing an amicable rapport with the people through modern extension strategies, Participatory Rural Appraisal (PRA) techniques, and participatory data gathering methods; (ii) facilitating the processes of community motivation, negotiation, conflict resolution, and empowerment of village level institution building; (iii) preparing mutually acceptable microplans for sustainable management of forests; and (iv) development of a manual on GIS for implementation of microplans and action plans by the communities themselves which are easy to understand and handle. Guidelines have also been provided for the preparation of a Range Profile and Village Profile for the selection of prospective JFM areas.

Experiences with working on JFM programmes in different states and that in the Haryana Shivaliks has provided TERI opportunities to try and test various PRA techniques, baseline surveys, strategies for institution building, and microplanning. As a constituent of the JFM Support Network, India, TERI organized a three-day National Workshop on Microplanning for JFM in September 1995, wherein an abridged draft manuscript of the present manual was presented for discussion by the participants. Based on the feedback received from the field as well as from the participants to the national workshop, the draft manuscript was further discussed with many foresters, project executives, NGOs, experts and consultants, etc., to elicit their views and suggestions. Published and unpublished literature and reports on the subject from different states of India, as well as from countries like Nepal, Thailand, Philippines, Indonesia, UK, USA, Australia, and those in the African continent, were also reviewed and utilized for the preparation of this manual.

The manual has been structured and written to serve as a guidebook for those involved or interested in participatory planning and management of natural resources, like the (i) village communities/institutions, (ii) staff of forest departments, (iii) NGOs/extension workers, and (d) training institutions, trainers and trainees. The manual introduces the user to the concept of microplanning, the principles that guide participatory planning, and the tools for participatory microplanning. The section after this is devoted to details of information that are essential for developing a Microplan and the different methods that could possibly be employed for different types of data requisition. Participatory Rural Appraisal (PRA) and other methods have been discussed in some detail. The developmental organizations and departments like that of agriculture, soil conservation, watershed management, wasteland development, and rural development, etc., can also use this manual effectively by making slight modifications in the procedures outlined, as per their local situations and requirements.

A workable process and format for microplanning has been evolved after first-hand field experience and interaction on the subject with a wide range of experts. Since this is more of a compilation-cum-review than purely original work, the available material and published literature on the subject has been extensively quoted. It is hoped that the manual will prove very useful and helpful to those involved in participatory planning and management of forest resources under varying situations and sets of conditions.

April 1998 Editors

ACKNOWLEDGEMENTS

TERI would like to express its appreciation of the excellent work done by Dr Bakhshish Singh in helping TERI to bring out the microplanning manual for Joint Forest Management Areas. Dr Singh has vast experience in the field of forestry, participatory planning and microplanning and has worked on a number of community forestry programmes. The Haryana JFM programme provided Dr Singh with an opportunity to try and test various PRA techniques, baseline surveys, strategies for institution building, and microplanning.

We gratefully acknowledge the comments and suggestions provided by Dr Doris Capistrano, Ford Foundation; Dr Parvez Ahmed and ~~Dr~~ V K Bahuguna, Deputy Inspector General of Forests, Ministry of Environment and Forests; Mr S T S Lepcha, Divisional Forest Officer, Uttar Pradesh.

TERI would like to acknowledge the efforts of Dr T P Singh and other members of the JFM team who have contributed immensely to this manual. Ms V Varalakshmi, in particular, has contributed substantially to the editing of the text.

Colleagues from the Publication Unit at TERI have been responsible for the production and publishing of this publication. Ms Beena Menon coordinated the production and copy-editing. Mr R K Joshi provided the artwork and Ms Anshu Eashwar, the typesetting of the book.

ABBREVIATIONS

ACF	Assistant Conservator of Forests
AP	Action Plan
DCF	Deputy Conservator of Forests
DFO	Divisional Forest Officer
DRDA	District Rural Development Agency
EC	Executive Committee
EEC	European Economic Commission
FD	Forest Department
FG	Forest Guard
FPC	Forest Protection Committee
GIS	Geographic Information System
ICAR	Indian Council of Agricultural Research
HRMS	Hill Resource Management Society
JFM	Joint Forest Management
JFMP	Joint Forest Management Programme/Plan
JMU	Joint Management Unit
MC	Management Committee
MoU	Memorandum of Understanding
NGO	Non-Governmental Organization
NTFP	Non Timber Forest Products
PF	Protected Forest
PFM	Participatory Forest Management
PME	Participatory Monitoring and Evaluation
PRA	Participatory Rural Appraisal
RF	Reserve Forest
RFO	Range Forest Officer
RMS	Resources Management Society
SDO	Sub-Divisional (Forest) Officer
TERI	Tata Energy Research Institute
VFC	Village Forest Committee
VFPC	Village Forest Protection Committee
WP	Working Plan

CONCEPTS AND SCOPE OF PARTICIPATORY MICROPLANNING

Forest communities depend on the surrounding forests for their daily needs of biomass and related resources. However, traditionally local communities have been generally excluded from the management of these forests. It was the alienation of these communities, who are virtually dependent on forest resources for their survival and sustenance, that brought the country's once verdant forests to their present state of all-round degradation. The revised National Forest Policy (1988) envisages people's involvement in the development, conservation, protection, and management of forests. The emerging concept of Joint Forest Management (JFM) emphasizes the participation of local communities in an equitable partnership with the Forest Department (FD). The underlying philosophy is that the local communities and the forests could coexist in a mutually sustainable manner and that the people could become effective keepers of the forests and their regeneration. It is now generally accepted that the local people who have a genuine stake in the health of the local resources must effectively participate in the planning and implementation of the development processes. This would require suitable initiative to develop land-use planning capability at the grass-root level, both for the village communities as well as for the field staff of FD. Preparation of village level Action Plans (AP) through participatory microplanning, therefore, has a pivotal role to play for sustainable management of forest resources.

What is microplanning ?

Microplanning denotes planning for a small (micro) area. In other words, it means deciding in advance what is to be done to achieve set goals of management concerning the resources of a small area. While a Working Plan (WP) is prepared by the FD for management of forest resources over larger areas like a Forest Division, a microplan may cover an area as small as a village.

Microplan is a document for linkage of resource management of a small area with specific identifiable user groups or communities, coordination being affected through consultation with the group. By decentralizing the planning process, the plans cater to the needs of community and by implementing them, the community can manage and control the resources on its own.

The microplanning concept, as envisaged for JFM, is a process of preparing a simple document for a village, in consultation with the user groups of forest resources, and arriving at a consensus for documenting a technological plan of action for its implementation. Microplans, therefore, are site-specific and are management plans prepared jointly by the forest community and forestry field staff. These plans have the 'bottom-up' approach and respond to local needs and local site conditions. The emphasis in participatory microplanning is on devolving forest management decision making directly to the users, and the FD to provide the necessary technical advice and/or financial assistance.

Why is microplanning necessary?

Microplanning is necessary to:

- motivate, organize, and involve village communities for protection, regeneration and development of forest lands, especially in the vicinity of habitations;
- ensure meaningful people's participation in the management of resources, and conservation, rehabilitation, and regeneration of ecologically fragile and degraded forest areas;
- assess (i) the condition, quantity, and quality of the resources and services available to the community from the forest areas, (ii) problems and constraints being experienced in connection with those services, (iii) opportunities, options, and strategies for overcoming the problems and enhancing the services;
- set priorities for resource development based on ecological and social considerations, available inputs/funds, etc.; and
- plan, project, and regulate the sustainable flow of benefits to all sections of the community by preparing a mutually acceptable location specific village level action plan in consultation with the people.

Microplan is thus a document or an action plan which the users can easily understand and which describes the operations they intend to carry out in each part of the forest as well as the village area. It is a tool to assist the user group in planning and carrying out operations for development and sustainable management of natural resources.

Unit of planning

Peoples' cooperation is the most important factor in any Joint Forest Management Programme (JFMP). The unit of microplanning should, therefore, be an area where people can cooperate and manage the resources themselves. A micro-watershed or a village in which people are in regular contact can be taken as a unit of planning. Even within a village, there are sharp differences among different social, economic and user groups. A *gram panchayat*, covering a cluster of villages, therefore, seems to be too heterogenous to effectively carry out JFMP which needs the willing cooperation of local people. A village situated within or on the fringe of a forest should, therefore, be the acceptable unit of microplanning for JFMP.

Guiding principles for microplanning

- Planning must consider the conditions and potentials of the natural resources of the given area, and the community's own resources and capabilities for managing those natural resources.
- To address the needs of the community, the planning process must be inclusive of them, and the tools and processes to be used in planning must be participatory.
- People are dependent on natural resources and sustainability of their own production systems depends on how people manage these resources.
- Understanding the community resources and their management is vital for assisting the community in planning activities for sustaining its resource base. By knowing its resources, the community will be able to address the self-defined needs of its members and exercise broad-based controls over critical decisions to be made for sustainable management.
- An important ingredient of microplanning is the participation of the implementors and beneficiaries of the plans. The process supports the use of local knowledge as basis for planning. As a result, the plans cater to the needs of the community. And by implementing these, the community can itself manage and control its resources.
- As the resources are utilized by the community, there is a need to ensure the equitable allocation of usufructs among the community members. The planning process must consider the various groups, and their corresponding and often conflicting interests in the resources. This calls for a strong and viable organization of community members from different groups. The planning process must allow

maximum participation of women, the young and the elderly, and the weaker sections of society to draw them into the mainstream of the organization's objectives, structures, systems, and the plans.

Aims of participatory planning

Participatory planning is a series of activities undertaken jointly by the community members, the field staff of the FD and/or the local NGO for determining and assessing the existing and potential resources of the community with a view to produce plans geared towards an equitable and sustainable management of those resources, keeping in view the needs and concerns of various user groups. The main aims of participatory planning are to:

- encourage the community members to participate in the planning process;
- ensure that the planning process considers the concerns of the majority of the user groups;
- arrive at realistic plans (to be implemented by the community) which will benefit those involved in their implementation; and
- ensure that the plans reflect both the social and technical aspects so that all sections of the society are helped in improving their quality of life.

The participatory planning method thus recognizes local knowledge, emphasizes on local agenda, and relies on community participation.

Objectives of a microplan

Once a forest has been placed under JFM, it needs to be managed by the user groups for achieving the following objectives:

- provide the basic needs of forest products on a sustainable basis to the community, and
- improve the condition of the forest.

Characteristics of a microplan

Microplan is a document which users can easily understand and which describes the operations they intend to carry out for development, benefit-sharing, and sustainable management of resources. The main characteristics of a microplan (as against the traditional forest management plan/working plan) are illustrated in Figure 1.

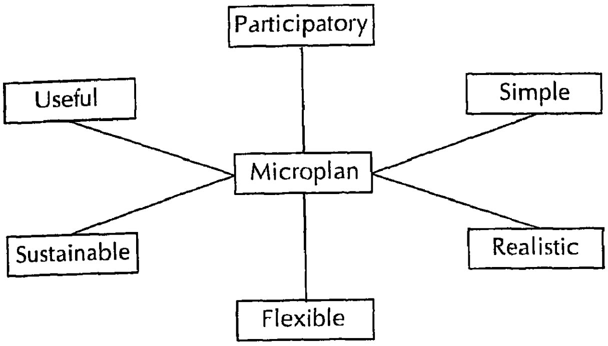


Figure 1 Salient characteristics of a microplan
Source: Pathan R S, Arul N J, Poffenberger M (1991)

Participatory (all user groups and the FD are involved in the preparation of the plan)

Although some active members of the user groups (e.g., managing committee) and field staff of the forest department initially prepare the draft plan, other members of the community have the opportunity to make comments and amendments during the small group meetings and the general body meeting.

Simple (easy to understand)

The microplan does not contain technical terms which cannot be understood by the community. It also does not contain data which is not needed by the community to manage the natural resources. The data collected during various exercises is used only as a background information for guiding the selection of management options.

Realistic (can be implemented by the users)

The community should decide whether it has the capacity to carry out an operation fully well before it is put into the microplan, e.g., the extent of area to be planted in a year.

Flexible (can be changed)

The microplan is an action plan or a working document. The community will learn from experience what can or cannot be achieved. They should be able to amend the plan according to these experiences. Major changes should be decided jointly by the community and the FD.

Sustainable (in terms of ecology, production, and finances)

The activities for the plan should be so chosen that the sustainability and conservation of the resources are maintained, and the flow of funds for the timely implementation of operations is assured.

Microplan, thus, consists of the development priorities, as agreed upon by the community, proposed actions and requirements, duties and responsibilities of individuals and groups, work schedules, and identification of areas for which the community needs external assistance.

Useful (meets the users' objectives)

The microplan only contains the management operations which need to be carried out to meet the users' objectives. Therefore, the objectives should be clearly defined in the microplan (in consonance with the National Forest Policy).

TOOLS AND REQUISITES FOR PARTICIPATORY MICROPLANNING

Communication and extension skills

Villagers have generally been excluded from the management of forests. The areas not managed by FD have been left by the State to the uncontrolled use by the people. However, with the introduction of the JFM approach, there is a distinct difference in the approach of the officials to the villagers. Forest management in the context of JFM has to change from periodic timber production to that of sustained annual production of fodder, firewood, and small timber—the basic requirements of subsistence for villagers. This requires complete reorientation by the forestry staff in terms of their approach to forest management as well as their attitude towards the user groups. The staff also need to equip themselves with modern communication and extension skills.

New roles for forestry staff

The forestry staff will have two main functions in their new roles for JFM:

- as motivators, to encourage the participation of community members, and
- as technical guides, to guide the local communities in the management of forest areas and common lands for higher production of biomass on a sustainable basis.

The transformation from a Range Forest Officer or a Forest Guard to a community motivator requires, apart from forestry skills, the ability to accept:

- villagers' opinion as valid; and
- a slow approach to decision-making by a disparate group of people.

Community participation can thus be achieved only by a process of motivation and encouragement. To be successful, it requires individuals possessing the skills of communication, empathy for local people, an understanding of their needs, and the ability to exchange and recognize local skills. (Box 1)

Box 1

Understanding

- is the gift that comes from listening
- is asking questions rather than having the answer
- allows differences to fade and similarities to come forth
- naturally acknowledges and appreciates the other person
- moves us from issue to vision
- creates movement from stalemate to resolution

Source: Crum T F (1987)

Basic concepts and principles of extension

Extension is the transfer of ideas and technologies through media or dialogue. Extension, or reaching out to different sections of society, is a prerequisite of any socio-economic programme. In the case of Social Forestry and Joint Forest Management Programmes, extension aims at creating an awareness among the people about the importance of forests and the tangible and non-tangible benefits that accrue from those resources as also involving all the sections of society in sustainable management and development of forests. Extension generally implies a one-way transfer of knowledge, from an outsider to an insider (villager). But in a participatory approach, extension is defined as two-way communication of knowledge. It is, therefore, a process of learning by the people, from the people, and with the people. Some basic guidelines to be followed for learning from the people are as follows:

- meet people at their convenience;
- use simple language;
- listen, observe, and assimilate;
- adopt an interactive mode of conversation;
- avoid too many questions;
- ask simple questions framed using why, where, how, what, when, and who;
- ask questions on what is visible or evident (by going to the site);
- avoid outright suggestions; and
- create conditions conducive for open discussions.

Extension should create general awareness and should be in consonance with the lifestyles of the people. For these purposes, the strategy for extension has to take into consideration:

- What to convey?
- Who will convey?
- Whom to convey?
- How to convey?

Listening skills: listener and learner's role

There would be complaints and comments from the villagers, during the meetings and discussions on various issues relating to the FD. Foresters must listen to these without protest. Whatever be the criticism, they must refrain from reacting and allow the villagers to express themselves. In fact, they should seek the villagers' advice on what should be done to make amends.

Facing rancour and protests with stoic endurance would be the testing ground for foresters' 'fire-proof skills'. Also, as they must be careful in assessing the villagers' sensitivity, the conversation should be based on data, statistics, case histories, maps, charts, photographs, hard facts, using every evidence at hand to remove skepticism, even using 'close-probe', if necessary.

Changing of perceptions about community development

- Accepting new ideas and changing oneself is what 'development' is all about (Box 2). Risking the unknown may be as difficult for some communities as it is for us. People in a community are just like us, comfortable with the way the things are, even if they are not working.
- New ideas mean change and change is not easy. Sometimes it means giving up something that is comfortable, such as a definite strategy for community development, even when we know it is not working

Box 2

Be willing to change

- The most dependable quality in the universe is that of change.
- A willingness to change eliminates the word *failure* from our vocabulary.
- To change our perspective in a conflict is to move from a point of view to a viewing point.
- Embracing change is consciously choosing our future.
- Flexibility allows us to stretch rather than shrink in life.

Source: Crum T F (1987)

very well. Staying with what is comfortable may seem better than risking the unknown.

- Be patient! Do not give up if the participatory approach does not work in the first instance. It has been found that some communities, especially those who have 'top-down' cultures or those who have long-term exposure to outside development programmes, become dependent on outsiders to do the thinking for them. They may not be interested or familiar with being involved in the thinking process.
- It is thought that communities participate in our activities. This is because in the past, outsiders have decided which activities will be conducted. Participatory management works with a different perspective. Outsiders participate in the activities that belong to the community.
- Think of the community as a river which flows on and on. It has flowed for generations, and will continue to flow. As facilitators (outsiders), we enter the flow of the river (community) at a certain point, and exit at another point. Hopefully, we leave something positive and lasting with the community.
- The idea behind participatory approach is that insiders and outsiders see themselves as equal partners in development, neither one has more control. The insiders and the outsiders realize that each will contribute something unique that the other does not possess. They recognize the value of each other's contribution, and that together they can accomplish what neither can do alone.

Some helpful tips to establish rapport with the people

- Take initiative to get yourself introduced to the villagers.
- Strike a friendship so that you can talk at a personal level.
- Explain the purpose of your visit in a simple manner.
- Share your own background/culture with the community.
- Move around the village gathering informal information.
- Be respectful to local customs and traditions.
- Be a patient listener even to seemingly irrelevant conversation/dialogues.
- Encourage people to overcome their shyness.
- Ask some personal questions about their family.
- Do not make any promises or commitments that you cannot keep.
- Be a keen and quick observer.
- Collect information about physical/cultural/socio-economic aspects.
- Collect information from a cross-section of the community.
- Encourage women to talk about their problems.
- Try to identify the potential of the village for further planning and development.
- Sit informally on the floor or wherever other community members sit.
- Share tea and food if offered.
- Remember the names of at least some people

The do's and don'ts for people's participation

Do's	Don'ts
1. Introduce yourself. ■ clarify the objectives ■ speak humbly	Do not make haste in asking questions; let people get to know you.
2. Take the villagers into confidence while asking questions on local issues. ■ ask questions one by one ■ befriend the villagers	Do not make haste in getting answers to your questions, otherwise many issues will be ignored.
3. Allow people to talk.	Do not speak more and listen less.
4. Be an observer and a learner.	Do not advice or comment.
5. Take note of the discussions.	Do not interrupt while others speak.
6. Be patient and wait for your turn to ask.	Do not be impatient.
7. All information given is important.	Do not consider any information as insignificant.
8. Go to the site for taking information.	Do not record agriculture/ forestry related data by sitting in the house.
9. Adopt a good methodology for asking questions.	Do not be satisfied with one answer and talk to more people.
10. Take indepth information—use what, why, how, who, etc., for asking questions.	Do not ask leading questions.

Review of existing information

There is a common tendency to collect information afresh rather than review what is already available in publications, records, etc. (Box 3). This can result in key questions and issues being overlooked. Therefore, efforts should be made early in the programme to identify, collect, and review the most important types of existing information, such as existing acts and laws, government reports, gazettes and notifications, etc., regarding land settlement and tenure systems, personal laws, rights and privileges, census data, etc.

Maps are particularly important to collect at an early stage since they are needed to produce base maps suitable for project work. The survey of India's toposheets on 1:50,000 or 1:25,000 scale are very handy for this purpose. The toposheets serve only as indicators. Topographic surveys may have to be carried out at vertical intervals of two metres to represent the topography of a watershed for designing of

Box 3

Review of existing information

Existing data are sources of information which are relevant to the area or subject of the planned Participatory Rural Appraisal (PRA) are available in published or unpublished form (e.g., reports, statistics, maps, aerial photos, and films).

Existing data form the background information for any information gathering. Time can be saved by knowing which data already exist and which do not have to be collected again. These sources are also useful for clarifying the PRA topic and formulating hypotheses by reviewing what has already been said or written about the topic and what has been missed in existing sources.

Existing information should be reviewed before the fieldwork and prepared as

- diagrams,
- tables and lists,
- brief summary paragraphs, and
- maps and photographs.

Caution

- do not spend time on the review of existing data which could be utilized in the field,
- be analytical and critical, and
- look out for what has been missed.

water-harvesting dams. For purposes of detailed planning, the village cadastral maps/revenue maps/village *shajra* is very useful which may have 16 inches to a mile (1:4000) scale. Survey sheets of Forest Department on 1:15000 scale are also useful for detailed planning.

Checklists

Checklists can be a key tool to guide group discussions for village information collection in the diagnostic phase. The purpose of using checklists is to produce the kinds of information necessary to make decisions on the probable validity of JFMP in each village. Checklists do not involve the formality of questionnaires, a feature which can be helpful in establishing a good rapport for discussion with villagers.

The discussion areas for JFM checklists are (i) village community composition and economic focus, (ii) forest resources that villagers view as important, (iii) traditional rights and tenure patterns in the forests, (iv) conflicts related to forest use (inter-village, intra-village, and village *panchayats*), (v) forest degradation problems that villagers regard as important, (vi) community's viewpoints on how they might be able to control problems and manage the forests, and (vii) people's viewpoints on inputs the FD could provide. There is every likelihood of a large list of demands by the villagers being generated. Try to cut down the checklist to what villagers themselves can do without depending largely on government funds or assistance.

It may be appropriate to combine the checklist with a brief village profile/resource data sheet for basic population, community, and economic data. This village profile should not be allowed to grow into a multi-page survey questionnaire.

Participatory appraisal

Participatory Rural Appraisal (PRA) tools facilitate collection and analysis of information analysis by the community and for the community (Box 4). PRA presents a local picture of resource use by encouraging the community to speak. This is essential in understanding a community's needs and forging a partnership between the FD and the community for participatory planning and management of forest resources. Plans drawn up through participatory methods involving local people are more likely to work than plans drawn by outsiders.

The process of microplanning begins by establishing preliminary contacts with villagers in the form of an initial exposure meeting through a PRA exercise, specially a sketch map of the village drawn on the ground (or on a sheet of paper) by the villagers themselves, followed by making

Box 4

The principles of PRA

The term participatory rural appraisal (PRA) describes a growing family of approaches and methods to enable the local people to share, enhance, and analyse their knowledge of life and conditions, to plan, and to act. The principles guiding PRA are as follows:

- *a reversal of learning:* to learn from rural people, directly, on the site, and face-to-face, gaining from local physical, technical, and social knowledge.
- *learning rapidly and progressively:* conscious exploration, flexible use of methods, opportunism, improvisation, iteration, and cross-checking, not following a blueprint programme but being adaptable in a learning process.
- *offsetting biases*: being relaxed and patient, listening and not lecturing, being unimposing instead of important, and seeking out the socio-economically deprived, and learning about their concerns and priorities.
- *facilitating investigation:* analysis, presentation, and learning by rural people themselves, so that they present and own the outcomes and also learn.
- *self-critical awareness and responsibility*: facilitators should continuously examine their behaviour, and try to do better, including accepting errors as an opportunity to learn to do better, and using one's own best judgement at all times, accepting personal responsibility rather than vesting it in a manual or a rigid set of rules.
- *sharing:* communicating ideas and information between rural people, and between them and facilitators.

Abstracted from Chambers R. 1992. *Rural Appraisal: Rapid, Relaxed and Participatory*, pp. 12–15. London: Institute of Development Studies.

of various 'line transects', trend line graphs, seasonal calendars, ranking and scorings, etc. Such PRA exercises help to develop a mutual understanding and confidence between the FD/NGOs and the various user groups within the community. A rough sketch of the village map made by the villagers themselves ensures their participation while a wealth of information gets disclosed. PRA thus increases local people's understanding of their problems and opportunities.

The PRA exercise of a village sketch map can be followed up by inviting and organizing local participation in the survey, walking criss-cross over the entire territory with as many people as possible and holding small-group discussions simultaneously, mapping/sketching the occurrence of all landscape elements and usage en route, discussion of changes in the recent past, current usage patterns and problems associated with each element at different seasons, and listing of opportunities/options and preferences for enhancing the resource quality, productivity and sustainable utilization. The outcome of these participatory exercises and discussions can be summarized in the form of sketches, charts, graphs, histograms, ratings, etc.

Community profile background sheet

Regarding the socio-economic and demographic characteristics of the area (Appendix I).

Historical transects/profile

Illustrating the changes in forest cover and structure over time, and their impact on the flow of forest products and local hydrology, etc.

Land-use transects

Providing perspectives on the type of ecosystems and use patterns in different zones of land-use and topography. Under each zone, the community can list important information such as species composition, economic activities, soil types, management problems, and opportunities, etc. (Box 5, and Figures 2 and 3).

Time lines

Identifying important past events (e.g., droughts, land reforms, forest clearing, fires, settlements, encroachments, etc.). (Box 6 and Figure 4).

Time trends

Reflecting changes in population, rainfall, volume flow of important forest products over time, and patterns of forest disturbance and regeneration, how the diversity of forest species and products have declined over time, how the distances travelled to collect fuelwood and fodder, etc., have changed over time.

Box 5

Transect
A transect is a diagram of main land-use zones. It compares the main features, resources, uses, and problems of different zones.

Steps involved in preparing a transect

- Find community members who are knowledgeable and willing to participate in a walk through their village and surrounding areas.
- Discuss with them different factors to be drawn in the transect (crops, land-use, trees, soils, etc.) and which route to take.
- Walk the transect.
- Observe, ask, listen (don't lecture).
- Discuss problems and opportunities.
- Identify the main natural and agricultural zones, and sketch distinguishing features. For each zone describe:
  - soils
  - crops/vegetation
  - livestock
  - problems
  - solutions
  - opportunities
- Draw the transect.
- Cross-check the transect with key informants.

Methods

- Use squared paper, and outline topography at the top
- Generalize impressions, do not be too detailed
- Include a rough measurement of the scale of the transect
- Revise the transect throughout the field work

Source: Theis J, Grady H M (1991)

Seasonal calendars and activity schedules

Depicts changes in product collection and activities of the people during different seasons and months (Figure 5).

Preparation of a daily activity schedule can help identify allocation patterns. Layout allocation data can then be used to calculate labour costs for collection, processing and marketing of different forest products.

Mobility maps

To determine where, why, and how often the graziers and women, travel for fodder collection.

Forest ecosystems and species composition

List of species and their uses as source of fuelwood, agricultural implements, fodder, food, fibre, medicines, gums, dyes, tannins, etc.

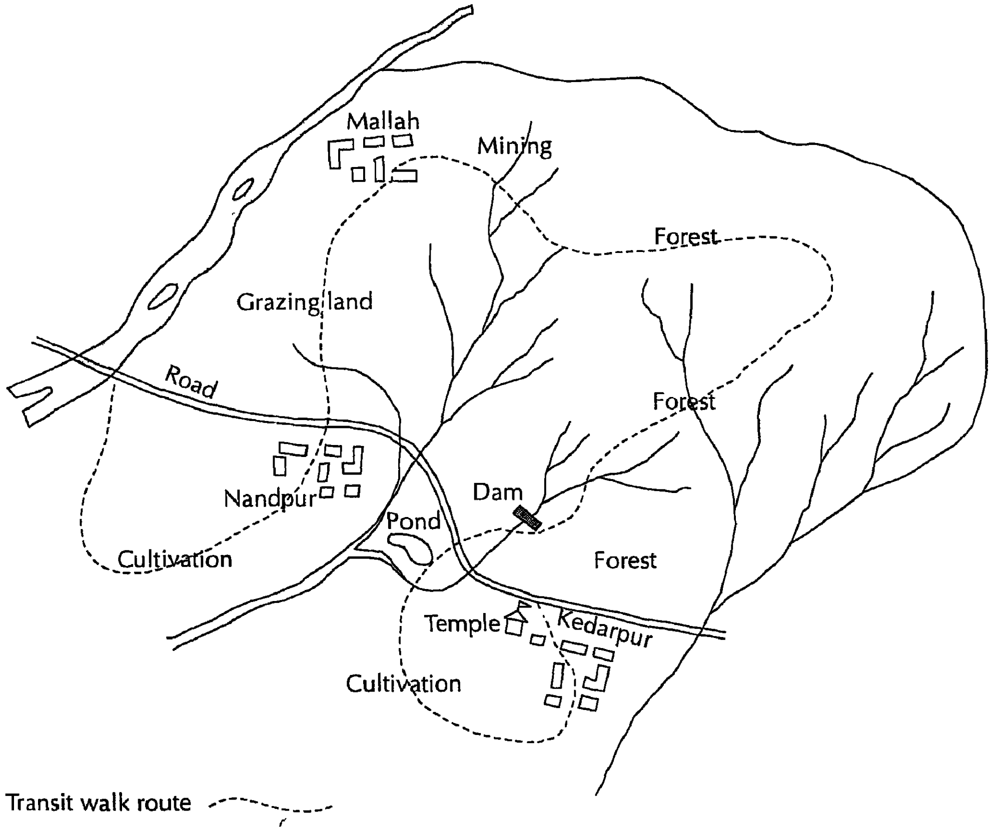


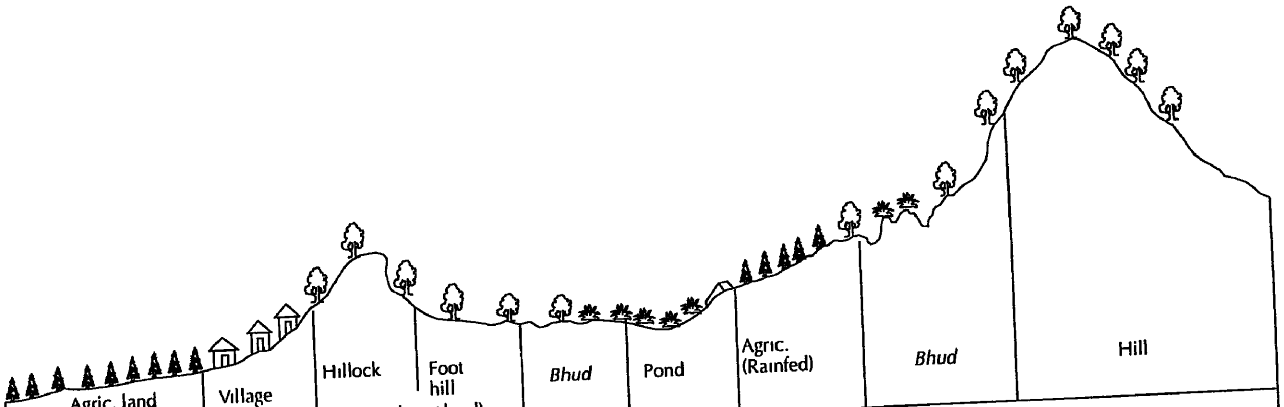
Figure 2 Line transect walk model in village Nandpur, Haryana Shivaliks

Preference ranking and scoring

To facilitate comparison, it may be best to allow the villagers to compare products within each type of use (e.g., fuel, fodder, food, fruit, timber, etc.) (Box 7), and then rank them according to the order of preference (Box 8). This will help in choice of species for afforestation and show the level of people's dependence on different species for their daily subsistence (Boxes 9 and 10).

PRA exercise for data collection and analysis can also cover some of the following techniques.

- Semi-structured interviews (Boxes 11 and 12)
- Focus group discussions
- Pairwise ranking
- Ranking by voting
- Wealth ranking
- Mapping and modelling
- Future scenario mapping
- Social mapping/mobility mapping
- Flow/causal diagram



	Agric. land (rainfed)	Village	Hillock	Foot hill	*Bhud*	Pond	Agric. (Rainfed)	*Bhud*	Hill
			(*Panchayat* land)						
Land use	Cultivation	Habitation	Wasteland		Gaucher	Village pond	Cultivation	Community forest	
Topography	Flat to gentle slope	Undulating	Rocky	Moderate slope	Old dunes, eroded	Low-lying	Undulating	Old dunes, gullied	Hilly, steep slopes
Geology/Soil	Sandy loam	Rocky	Quartzite, schist sandy loam	Rocky outcrop, soil pockets	Deep sandy, eroding	Deep clay loam	Shallow sandy loam	Sandy, Kankar nodules	Quartzite/sand stone gravelly, eroded
Vegetation	*Khejri*, *Kikar* as Agro-forestry trees	*Neem*, *Kikar* for shade	Barren	Degraded *Khairi*	Overgrazed *Jand*, *Neem*, *Kikar*, *ber*, grasses	*Jand*, *Kikar*	*Kikar*, *Neem*, *Jand*	Overgrazed *Jand*, *Kikar* *Beri*, *Kana Kair*	Degraded scrub *Khiri*, *Dhok*, *Ronj*. *Kikar*
Products	*Jowar*, *Bajra*, *Gwar*, Mustard *Arhar*, *Til* Wheat, Barley, Gram	Milk, cowdung	Stones for building	Poor forage/ fuel	Poor fodder/fuel	Water for livestock	Poor agric. crops	Grasses, fuelwood	Brushwood fuel (no timber)
Management problems	Water scarcity, poor agric. yields	Scarcity of forest and food products	Erosion, no vegetation	Grazing, felling	Overgrazing, coarse grasses and bushes	Siltation, dry in summer	Eroded soils, poor Agric.	Degraded, vegetation gullies	Grazing, felling, fires mining, poor vegetation cover
Management opportunities	Contour bunding tubewell	JFM	Planting of hardy species	Development of silvipasture, soil cons.		Soil cons. in catchment	Silvipasture or orchard	Soil cons., silvipasture, fruit trees	Afforestation and protection

Figure 3 Land-use transect, village Ghata Sher, Aravalli Hills

Box 6

Time line

Time line is a history of major remembered events in the village or community with approximate dates. In this method (a good ice-breaker) elderly villagers narrate their life histories. Since it is often difficult to remember the exact dates of important changes, a villager can be facilitated to broadly connect such changes with major events, e.g., political regimes and thus summarize major events and changes that have taken place during his/her lifetime.

Time Line of Gamtalao (Gujarat)

1922	Original Gamtalao village was established.
1925	Phulwadi Falia was founded.
1947	Independence.
1950s	Private land allocation and tilling.
1968–1970	Commercial clear-felling of forests in the area.
1970	Kotwalia basket-makers begin to settle in Phulwadi.
1980–87	Repeated attempts and failures to reforest Gamtalao area with *Acacia auriculiformis* and *eucalyptus.*
1988	Circle Conservator and GFD staff hold meeting with Gamtalao villagers to discuss reforestation, community needs, and collaborative management possibilities.
1988	Formation of Gamtalao Forest Protection Committee (FPC) 25 (unregistered); hectares protected with enrichment planting of local species.
1989	Gamtalao begins protecting 60 additional hectares. Phulwadi villagers request the people of Gamtalao to allocate 35 hectares of forest land under their protection.
1990	Gamtalao FPC places 20 more hectares under protection.
1991	First *gobar* gas plant was set-up (12 total).
1992	Phulwadi women propose to establish *Mahila Mandal.*

Source: Society for Promotion of Wastelands Development (1992)

- Systems diagram
- Histogram
- Workshops
- Stories
- Case studies and portraits

The above list of PRA tools is indicative only. In actual practice, the community will utilize only some of these tools, as they may feel convenient and comfortable for identification, negotiation, evaluation, and selection of management options for their microplan.

Collection of secondary data

Carefully designed semi-structured interviews combined, with checklists and cross-checks (triangulation) during the PRA exercise, can be

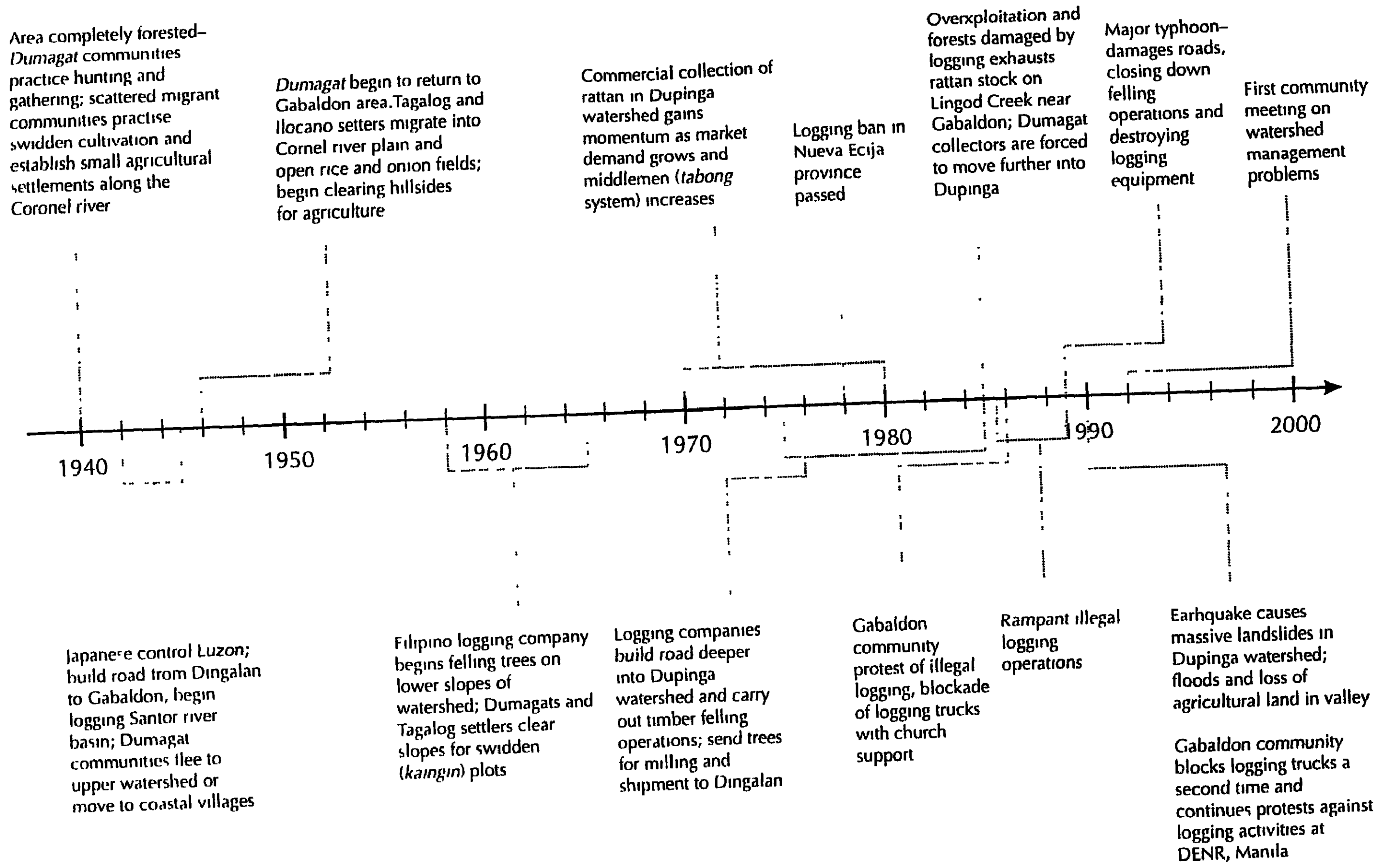

Area completely forested– *Dumagat* communities practice hunting and gathering; scattered migrant communities practise swidden cultivation and establish small agricultural settlements along the Coronel river
Dumagat begin to return to Gabaldon area.Tagalog and Ilocano setters migrate into Cornel river plain and open rice and onion fields; begin clearing hillsides for agriculture
Commercial collection of rattan in Dupinga watershed gains momentum as market demand grows and middlemen (*tabong* system) increases
Logging ban in Nueva Ecija province passed
Overexploitation and forests damaged by logging exhausts rattan stock on Lingod Creek near Gabaldon; Dumagat collectors are forced to move further into Dupinga
Major typhoon– damages roads, closing down felling operations and destroying logging equipment
First community meeting on watershed management problems
1940
1950
1960
1970
1980
1990
2000
Japanese control Luzon; build road from Dingalan to Gabaldon, begin logging Santor river basin; Dumagat communities flee to upper watershed or move to coastal villages
Filipino logging company begins felling trees on lower slopes of watershed; Dumagats and Tagalog settlers clear slopes for swidden (*kaingin*) plots
Logging companies build road deeper into Dupinga watershed and carry out timber felling operations; send trees for milling and shipment to Dingalan
Gabaldon community protest of illegal logging, blockade of logging trucks with church support
Rampant illegal logging operations
Earhquake causes massive landslides in Dupinga watershed; floods and loss of agricultural land in valley
Gabaldon community blocks logging trucks a second time and continues protests against logging activities at DENR, Manila

Figure 4 Time line of events affecting land-use in Dupinga, Philippines
Source: Poffenberger M, McGean B (1993)

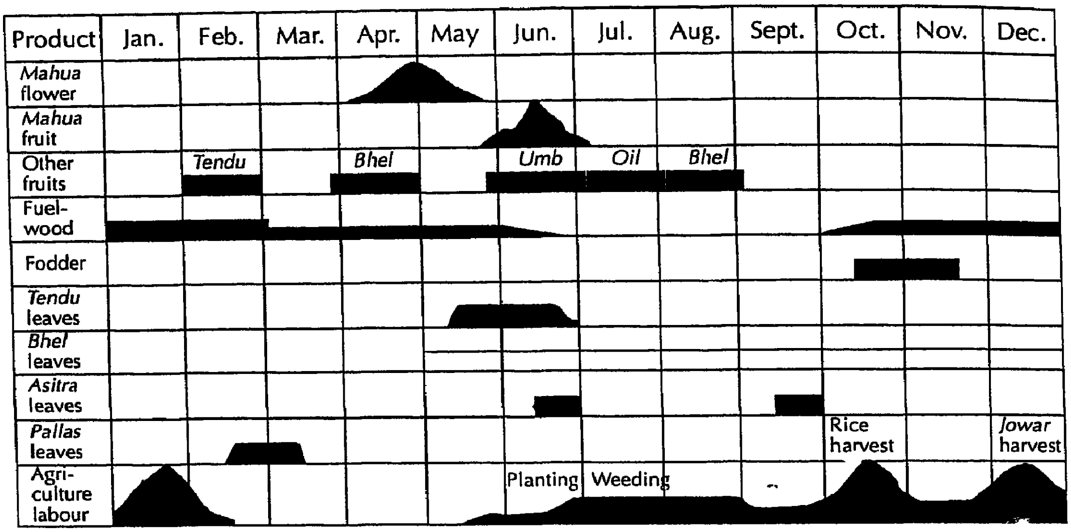


Figure 5 Calendar for forest product collection and agricultural activities (seasonal) in village Ghodbar, Gujarat
Source: Society for Promotion of Wastelands Development (1992)

Box 7

Direct matrix ranking of tree species
Village Mogi Nand, Nada Range, Pinjore Division, Haryana

Criterion	**Khair**	**Chhal (*Anogeissus*)**	**Sisham**	**Bamboo**	**Amla**
Leaf fodder	3	5	1	4	2
Fuelwood	3	5	4	1	2
Building material	2	3	5	4	1
Medicine	4	1	2	3	5
Agric. implements		4	2	3	1
Charcoal	2	5	4	1	3
Other uses	3	4	1	5	2
Total Score	22	27	19	21	16
Rank	II	I	IV	III	V

V = Best, I = Worst

Box 8

Guidelines for ranking

- Let people do it their own way.
- Use people's own units of measurement and names for ranking.
- See if you can adapt local games for ranking.
- Probe the reasons for the order of the ranking.
- Be prepared and be patient.

Source: Theis J, Grady H M (1991)

Box 9

Ranking

Ranking or scoring means placing something in order. Analytical tools, such as ranking, compliment semi-structured interviews by generating basic information which leads to more direct questioning. They may be used either as part of an interview or separately. Pair-wise ranking, for example, helps identify the main problems or preferences of individual community members, and their ranking criteria, and enables the priorities of different individuals to be easily compared.

Strengths of ranking

- Useful for sensitive information, especially for income or wealth. Informants tend to be more willing to provide relative values regarding their wealth than absolute figures, rank your income sources by importance rather than by how much you earn.)
- Ranking scores are easier to obtain than absolute measurements.

Ranking methods include

- Preference ranking (ranking by voting).
- Pair-wise ranking.
- Direct matrix ranking.
- Wealth ranking.

Source: Theis J, Grady H M (1991)

Box 10

Steps in direct matrix ranking

1. Choose, or ask people to choose, a class of objects which is important to them (e.g., tree species, cooking fuel types, fruit)
2. List the most important items (3–8 items)
3. Elicit criteria by asking:
    - 'What is good about each item? What else?' (continue until no more replies)
    - 'What is bad about each item? What else?' (continue until no more replies)
4. List all criteria.
    - Turn negative criteria into positive by using opposites (e.g., vulnerable to pests becomes resist pests)
5. Draw up a matrix
6. For each criterion, ask which object is the best
    - Which is better, then best?
    - Which is bad, then worse?

      of the two, ask,
    - Which is better?
7. Ask which criterion or factor is most important.
8. Force a choice. If you could only have one of these, which one would you choose?
9. Repeat for a number of interviewees/user groups

Source: Theis J, Grady H M (1991)

Box 11

Semi-structured interviewing

Semi-structured interviewing is guided interviewing where only some of the questions are predetermined and new questions come up during the interview.

The interviewers prepare a list of topics and questions rather than a fixed questionnaire. Semi-structured interviews are held with:

- *Individuals:* for representative information. Interview a number of different individuals on the same topic (e.g., women, men, old, young, participating and non-participating farmers).
- *Key informants:* for specialized information. Key informants have special knowledge which others don't have (e.g., teachers, forest contractors, forest guards).
- *Groups:* for general community-level information.
- *Focus groups:* to discuss a specific topic in detail.

Source: Theis J, Grady H M (1991)

Box 12

Semi-structured interviewing: common mistakes

- Failure to listen closely.
- Repeating questions.
- Helping the interviewee to give an answer.
- Asking vague questions.
- Asking insensitive questions.
- Failure to probe (cross-check) a topic.
- Failure to judge answers (believing everything).
- Asking leading questions.
- Allowing interview to go on for too long.
- Overgeneralization of findings.
- Relying too much on what the well-off, the better educated, the old, and the men have to say.
- Ignoring anything that does not fit the ideas and preconceptions of the interviewer.
- Giving too much weightage to answers that contain 'quantitative'data' (e.g., 'how many goats do you own?')
- Incomplete notetaking.

Source: Mascarenhas J *et al.* (1991)

used for collection of secondary data on demographics, socio-economics, etc., of the community. Data should be collected from markets, village households, FDs, revenue departments, etc. Methods in PRA and quantitative survey methods do not exclude each other and can be used simultaneously. The choice of methods depends on the kind of information required and the availability of resources (staff, time, funds, vehicles, etc.). Particularly, when accurate quantitative data is needed, as in a demographic census or assessment of resources productivity or when sophisticated statistical analysis is required, PRA methods cannot replace more formal survey techniques. Therefore, direct observations of important indicators to support and cross-check findings may be essential. However, if the main objective is to learn about community attitudes and opinions, PRA data would be collected, analysed, and disseminated to assist community members and development workers in making decisions.

Apart from the information gathered during PRA exercise, the following secondary data may be helpful for preparation of a microplan.

Demographics

Population, number of families, ethnic composition, land holdings (rich and small farmers), landless persons, artisans (carpenters, blacksmiths, goldsmiths, masons, potters, washermen, tractor/pump mechanics, etc.), distribution of households, literacy rate (separate for men and women), village institutions (*anganwari, mahila mandal*, youth forums, etc.).

Livestock

Number of animals and their distribution per household, animal husbandry practices including grazing, use of animals, animal products, cowdung, diseases, mortality and morbidity, yields, etc.

Agriculture and horticulture

Land-use pattern, type of land, cropping pattern, irrigation, agricultural tools and machinery, manure, pesticides, marketing, and storage of produce.

Forest resources

Land types, topography, extent of area, legal status, crop compositions, quality (degree of degradation), blanks, non-timber forest products (NTFPs), nature and extent of dependence on forest resources by villagers especially the landless, marginal farmers and artisans.

Village resources

Community wastelands, streams, forest *kulhs*/irrigation channels, springs, wells, ponds and tanks, dispensary, post office, communication, *panchayat, anganwari* and *mahila mandal*, milk cooperative, ration shops, gobar gas plants, solar energy devices, wheat and rice mills, cottage industries, etc.

Assessment of biomass related expectations and needs

Biomass needs like fuel, fodder, wood, timber, etc., through a sample survey.

A village elder explaining the Resource Map prepared by villagers in a PRA exercise in Aravalli Hills

Village profile and diagnostic review

Village profiles (Appendix I) facilitate the identification of broad categories of villages which appear to be the most suitable (or unsuitable) for JFMP. The preliminary profiles are constructed through discussion with local leaders, social groups, or local extension institutions, etc., by paying brief and informal visits to as many villages as possible in each range. The range profiles can then be used to target the more time-consuming diagnostic techniques on high potential sites. JFMP aims to identify villages and communities where participatory management may be an appropriate solution to forest degradation. In order to do this, we need to know:

- Who uses the common land and forest area, and for what?
- What forest resources (timber, fuelwood, grass, NTFPs, etc.) are available, and in what condition?
- How much direct economic interest are villagers likely to have in forest resources? Are forest products likely to be a major source of income for villagers, or are they likely to be small in comparison to other sources?
- How many groups use the forest area and how divided are they? Do single villages with relatively homogeneous caste composition use any area of the common lands or forest which they could manage or are most areas extensively used by many villages and many castes? Are there major existing conflicts between forest users which could undermine JFM efforts?

Fodder grass is very useful NTFP for village communities. It should be stall fed and not subjected to open grazing

- Is it possible to establish a logical link between access to resources and the incentive and ability to address degradation problems? Would all the people who currently use the forest benefit from increased resource access and production?
- What resources (financial, staff, time, etc.) can the FD allocate to support JFMP?

Baseline survey

Baseline survey is an inventory of current status of human and natural resources of an area at a given time. At the time of introduction of JFM programme in an area, it is advisable to assess the initial condition of resources so that the impacts of forest protection and developmental activities undertaken by the community can be monitored at later stages in terms of improvement (or otherwise) in regeneration, crop density, yield of various products (including agricultural production) and socio-economics of the community. For the purpose of JFM projects, the following categories of data may be collected during a baseline survey.

- Demographics and socio-economics of the local community as a village profile sheet.
- Participatory sketch mapping of resource use and condition.
- Vegetation surveys to assess the composition, structure, and productivity of forest.

Details about these three categories of baseline surveys are given below.

Demographic and socio-economic data

Village profile sheets (Appendix I) are filled up and are based on the information collected during PRA exercises, village meetings, group discussions, semi-structured interviews and the data available from published records, as discussed in the preceding paragraphs. The format of the 'village profile' as given in Appendix I is indicative only and can be modified as per local conditions and needs. A sample of demographic data of a village community is given in Table 1.

Participatory sketch mapping

Sketch mapping can be a key tool in identifying potential JFM sites. The main purpose of diagnostic sketch mapping is to create a visual outline of the factors prevailing in a JFM area, which can be easily understood by both foresters and villagers. Different types of sketch maps generally prepared for communication with the villagers and for baseline surveys are:

1. social map and village map;
2. location and base map;
3. resource maps—(i) resource use map, (ii) forest condition map, (iii) forage condition map, and (iv) soil erosion map;
4. command area map;
5. management map, etc.

Sketch mapping can be done in a number of ways. Some maps, such as those indicating the community composition of villages, can be made by field staff with little inputs from the villagers. Others require the participation of villagers. Forestry staff could produce many maps on their own as villagers have limited time available. But the maps made by the field staff will not include villagers' perspective on forest condition, traditional use, rights, etc. The map-making process needs to be supervised by someone with sufficient experience and sensitivity to villagers' perspectives so that an appropriate balance can be found.

The general approach is to hold a village meeting in which the programme purpose is explained and the villager's participation is solicited in base map preparation. Men and women from each section of the community are invited to participate to ensure that the map reflects the views of the entire village. For introduction of the base maps, the volunteers are taken to a high location from where the surrounding area can be clearly seen and related to the base map. Making the villagers draw a few rough sketch maps on the ground and relating these sketches to the base maps also helps. Villagers are asked to point out streams, ridges, peaks, roads, villages, temples, and

Table 1. Basic demographics of village Nada, Pinjore Division, Haryana

Name of Hamlet	*Main caste*	*Population*	*Families*	*Main occupation*	*Agric. land*		Animal wealth				
					Total *(Bigha)*	Dam Irrigated *(Bigha)*	Cows	Buffaloes	Bullocks	Goats	Camels
Upperla Nada	Labana	35	256	Farming and labour	347	228	37	80	39	23	2
Gabla Nada	(i) Labana	53	323	Farming	475	475	25	147	65	180	4
	(ii) Saini	1	4	Shopkeeper	-	-	-	-	-	-	-
	(iii) Jhivar	1	6	Labour	-	-	-	-	-	-	-
Total		55	333	-	475	475	25	147	65	180	4
Nichla Nada	(i) Labana	30	246	Farming	421	170	13	83	27	3	-
	(ii) Jhivar	2	10	Labour	-	-	1	2	-	-	-
	(iii) Nai	1	10	Labour	-	-	-	1	-	-	-
Total		33	266	-	421	170	14	86	27	3	-
Harijan Nada	(i) Harijan	21	88	Labour	26	26	13	9	1	32	-
	(ii) Labana	1	6	Farming	9	9	-	2	-	-	-
	(iii) Brahmin	1	2	Service	-	-	-	-	-	-	-
Total		23	96	-	35	35	13	11	1	32	-
Grand total		146	951	-	1278	908	89	324	132	238	6

other significant features, and then indicate their location on the base maps. This type of discussion proceeds until it is clear that all the volunteers have understood the base maps. Once the base maps are fully understood, construction of location and other maps can proceed.

Once maps are made, it is important to check their accuracy. This can be done by going to selected key points, walking along the boundary, or making transects through village forest areas. It is useful to cross-check with other villagers. This can help in interpreting the maps. In addition, issues which have not come out at other times often arise in the process of cross-checking. Various types of sketch maps, helpful for microplanning and baseline surveys, are briefly described here.

Village map

A complementary participatory mapping technique has been developed wherein the villagers are requested to draw maps of their village and the adjacent forest area on the ground (Figure 6). Coloured powders (powders used during *Holi*) are supplied which they can use to demarcate and indicate various features (such as social groups, streets, water sources, meeting places and facilities, etc., in the village and common land, dam sites, roads and paths, forests, degraded forests, eroded areas, mining areas, etc.). Besides coloured powders, local materials like stones, twigs, leaves, flowers, seeds, grass, sand, lime, ash, sawdust, etc., can also be used. These maps are used as a focus for discussions on forest issues. The process of making the maps should proceed with as little intervention as possible by the field staff. Villagers often debate what features are important and how to depict them. As a result of these debates and the absence of field staff interference, a variety of relevant and often unexpected information can be brought out. Maps produced in this way can be recorded by photographing them and copying on large sheets of paper (poster). The group can then walk through the area with this poster map for ground checking, on-the-spot discussions, and integrating additional information that may emerge.

Base maps

Village *shajra* (revenue map) and survey sheets of FD on 1:15,000 or 1:25,000 scale can be used as base maps. The village map (poster) prepared by villagers in the PRA exercise, as explained above, can also be used as a base map for the sake of convenience for better participation by the people in varied discussions on resources condition, use, and management, etc.

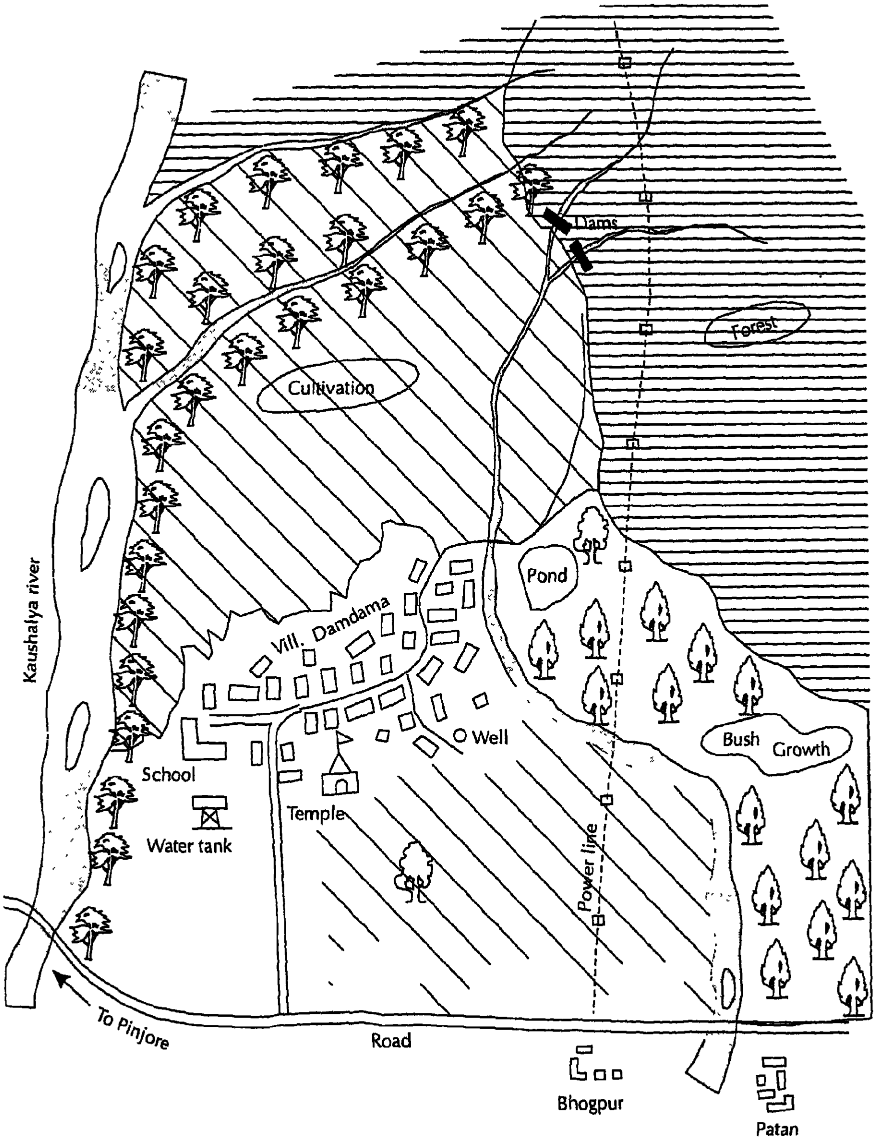


Figure 6 Map of village Damdama, Morni, Pinjore Division

Resource use map

Based on PRA discussions and field observations, the use routes, collection areas, and informal usufruct areas traditionally used by different user groups, settlements, neighbouring villages, etc., are marked on the base map by arrows, dotted lines, different colour shades, etc. (Box 13). The preparation of this map is a fundamental necessity because it shows who the traditional users of the forest area are, and, for the purpose of JFM, who are the people and communities to be involved and included in the microplanning for a single village (Figure 7).

Box 13

How to do resource mapping

1. Find people who are knowledgeable in the area and willing to share their knowledge.
2. Choose a suitable place and medium, e.g., Manila paper, blackboard, or floor.
3. Explain to the participants the purpose and procedure for the activity. Let them decide on the symbols they will use in representing the resources of the community.
4. Let the participants draw their map. Observe, ask, listen (do not lecture).
5. Encourage corrections and additions.
6. Keep a permanent record of the map (on paper), including the 'mappers' names to give them credit for having prepared the map.

Source: Upland Development Programme (1994)

Alternatively, they may form a combined Resource Management Society (RMS) of their villages based on mutual understanding for sharing of benefits. This map should also indicate different types of land-use such as (a) habitation, (b) cultivation, (c) forest, (d) water bodies (streams, ponds, dams etc.), and (e) roads, paths, transmission lines, etc.

Forest condition map

The condition of forest can be expressed in terms of stand composition, structure, canopy density, stocking, regeneration status, etc. For the purpose of microplanning in degraded forests, canopy density can be used as the single most important index of forest condition. The area can be subdivided into patches of different density classes by delineating and marking such patches on the base map. The following density classes may be adopted for mapping of degraded forests:

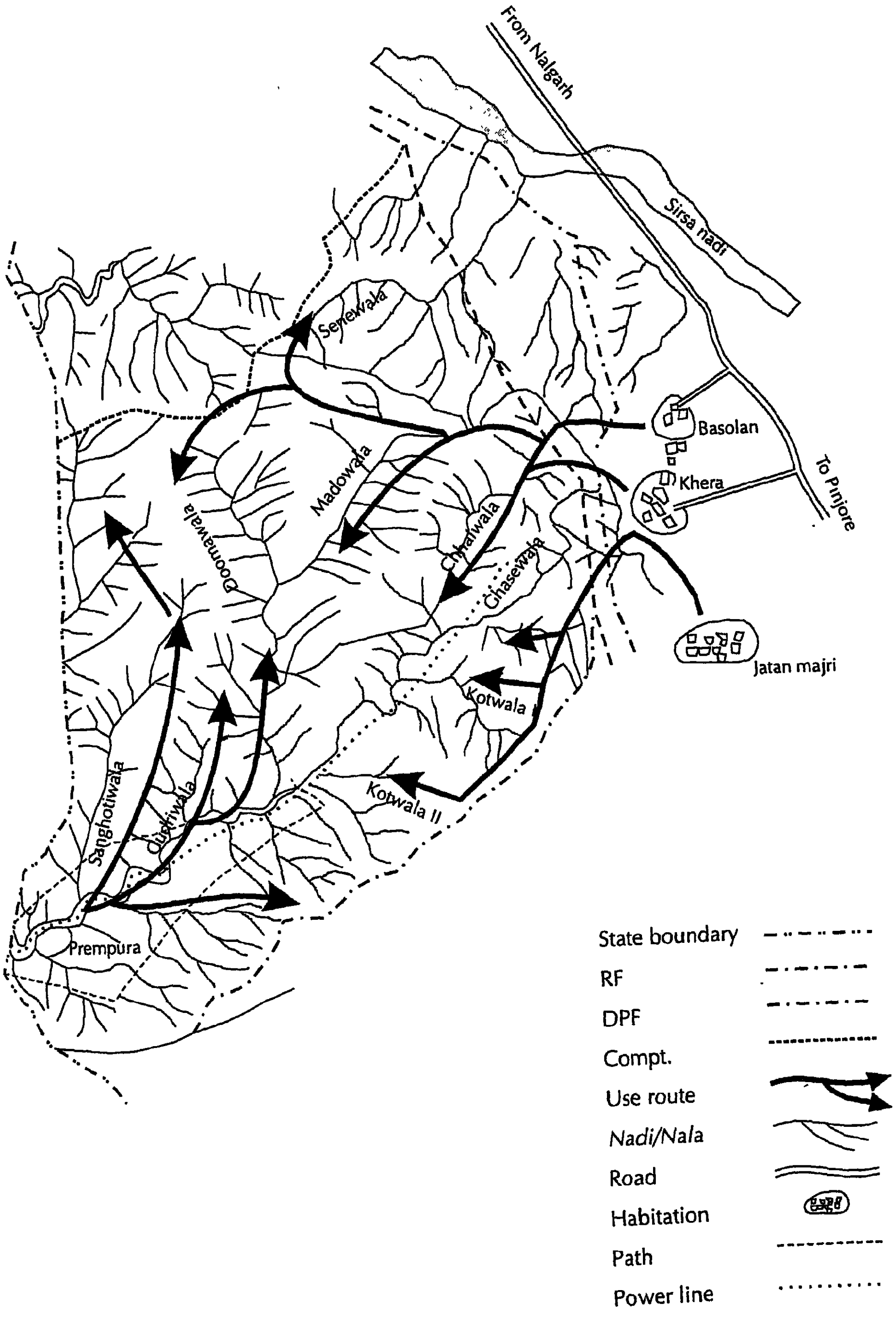
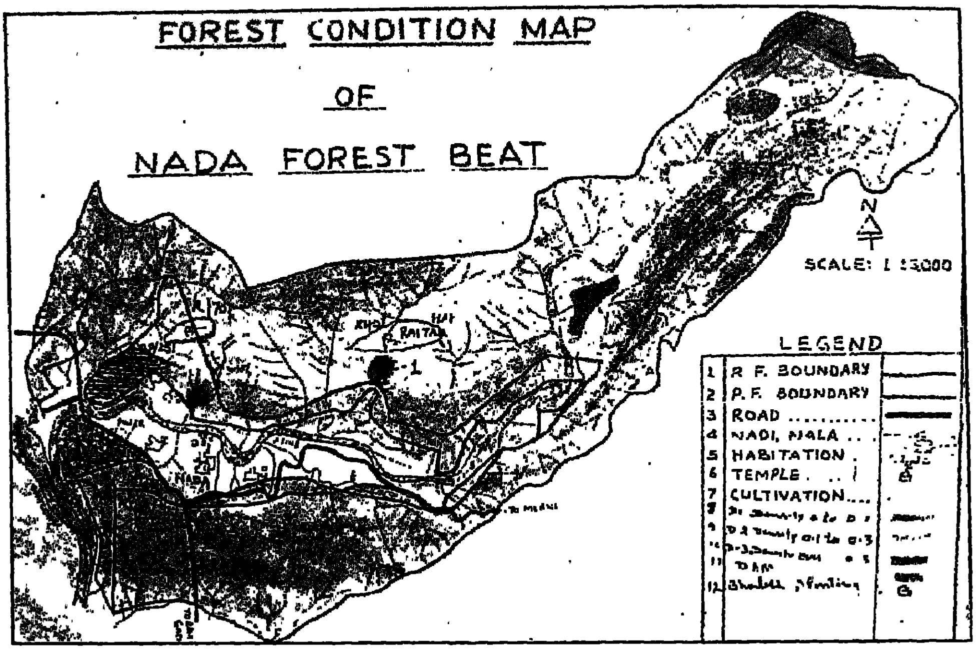


Figure 7 Resource use map of Prempura forest seat, Haryana Shivaliks



Forest condition map

The density classes can be indicated on the map by different shades of colour (see Table 2), or by using different patterns. The classification of canopy density given in Table 2 may be modified as per the local conditions and forest type, etc.

Table 2 Density classes for mapping of forest condition

Density classes	Canopy density	Forest category	Colour shade
D-1	0%–10%	Poor	Red
D-2	10.1%–30%	Moderate	Yellow
D-3	Over 30%	Good	Green

Forage condition map

Fodder grass is one of the most important products for which villagers depend on the forest. Depending upon the importance attached by the villagers to different species, the ground vegetation may be grouped into a few classes for the purpose of forage mapping (Table 3). Apart from the fodder grass, the forest floor may also be occupied by non-fodder unpalatable grasses such as bhabbar *(Eulaliopsis binata)*, kans (*S. spontaneum*) etc., and shrubs like booty (*Lantana camara*), bansa/basooty (*Adhatoda vasica*), etc.

Table 3 Classification of forest based on forage condition

Forage class	Predominant vegetation	Category of area	Colour shade
F-1	No grass or shrubs	Blank area	Red
F-2	Fodder grasses	Fodder area	Green
F-3	Bhabbar grass	*Bhabbar* area	Yellow
F-4	Kana, Kans grass	*Poola* area	Orange
F-5	Lantana, shrubs	*Jhadi* area	Brown

Soil erosion map

The categories of soil erosion that may be used for classification of forest land into erosion classes are mentioned in Table 4.

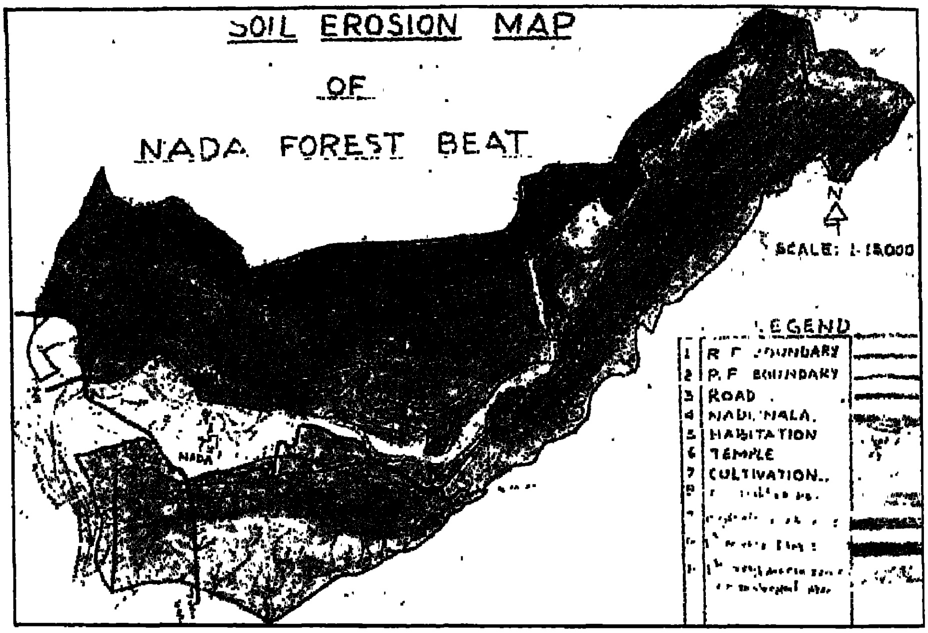
Table 4 Classification of forest land based on intensity of soil erosion

Erosion class	Condition of land	Erosion category	Colour shade
E-1	Slight sheet erosion, good top soil and ground cover of vegetation, humus present, gentle to moderate slope.	Slight	Green
E-2	Heavy sheet erosion, sub-soil exposed, some rill formation, moderate ground, cover, humus missing, moderate slope.	Moderate	Yellow
E-3	Extensive rills and small gullies formation, a part of sub-soil also eroded, poor ground cover, moderate to steep slope.	Severe	Orange
E-4	Network of medium to deep gullies, land slides or undercutting, exposed steep or vertical slopes, almost nil vegetation.	Very severe or destroyed	Red

Command area map

The command area map exercise is helpful for deciding the location, design, and size of any proposed water-harvesting dam and also for effective water management of the existing dam. Based on the extent of the catchment area, height of embankment, pond area, storage capacity, etc., of the existing or proposed water-harvesting dam, the irrigation potential is worked out keeping in view the possible improvements in cropping pattern and topography of the cultivated area. The area which can thus receive adequate irrigation to tide over lean period of moisture availability (in the prevalent dry farming system) is marked on the village/*shajra* map to indicate the command area of the dam.

The layout of the irrigation channel and underground pipeline for distribution of water to cultivated fields is also marked (Figure 8).



Soil erosion map prepared in a participatory baseline survey for microplanning

Management map

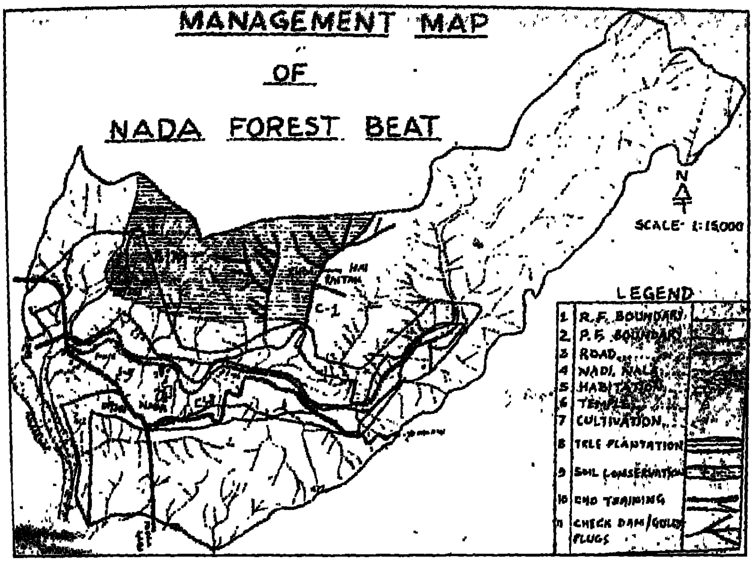
This is the final map as an outcome of the participatory discussions and decisions reached for treatment and management of the area based on the PRA and mapping exercises, condition, and quantum of resources, needs and expectations of different user groups, constraints and problems, options and alternatives for resources use, technical considerations and general consensus and agreement amongst the community and the Forest Department.

The following activities can be indicated in the management map by using suitable notations, signs, colours, shades, etc.

- Area to be planted (showing annual coupes) and soil conservation measure needed e.g., *cho* and stream training, gully control measures, silt detention barriers and dams
- Location of water-harvesting dams
- Area to be managed as pasture
- Area to be developed for medicinal plants, sericulture, *bidi* leaf, myrobolans, etc.

Vegetation survey

Depending upon the nature of topography and forest types occurring in the area, a suitable sampling technique may be adopted for the survey of vegetation conditions. Stratified systematic sampling using line transects and nested quadrats can be useful in most of the cases, and two per cent to four per cent partial sampling has been found to give reliable data in degraded forests. In case of highly cut up and steep

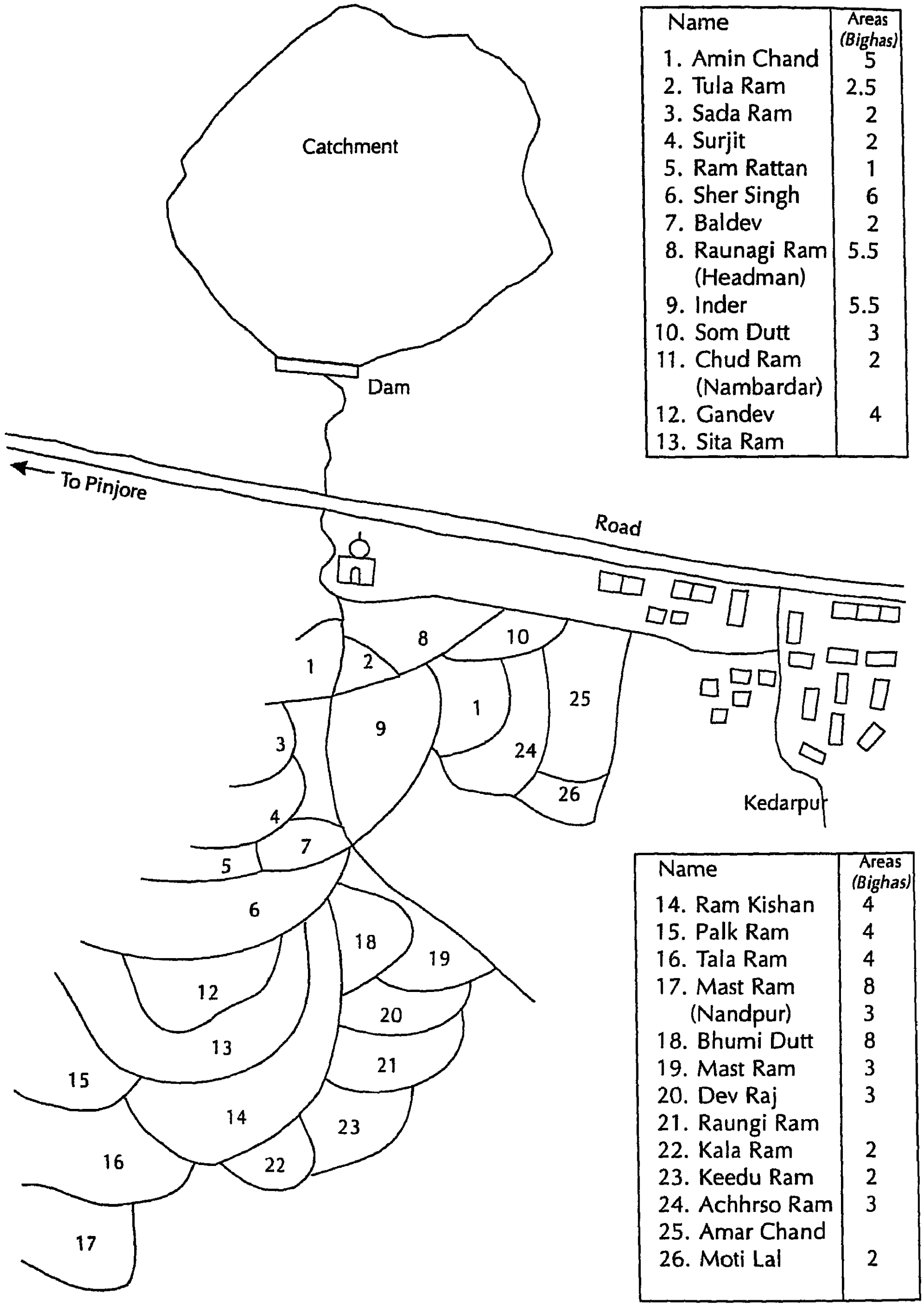


Management map

hilly areas, laying out-of-line transects is difficult and stratified random sampling by quadrat method may be useful.

In order to distribute the field work amongst different survey parties, the area to be surveyed may be divided into two to three sections and each survey party allotted one such section. A survey party should be headed by a trained forester and forest guard, and be assisted by adequate members of the local community. On-the-spot training should be imparted to the survey parties to acquaint them fully with the survey technique to be adopted and, as far as possible, the local educated people should be involved in the recording of field data. The survey parties would need a set each of the following equipment for the survey work.

- Base map of the area.
- Ranging rods, 4 to 6 in number, for alignment of line transects, staking and height measurement of smaller trees.
- Strong ropes, 5 in number, with markings at 40 m and 25 m to lay quadrats of 40 × 25 m size for enumeration of tree species.
- A tape of 50 m in length, for measurement of distances along baseline and cruise line, etc.
- Diameter/girth tapes, 2 in number.
- A wooden frame/quadrat of 1 × 1 m size for recording composition and yield of grasses.
- Magnetic compass for orientation and recording of bearing.
- Spring balance or pan balance (with weights) for weighing harvested biomass (grasses and shrubs).
- Sickle for harvesting of grasses and ground vegetation.
- Bill hook or small axe for clearing of survey lines.
- Abney's level for measuring height of taller trees.



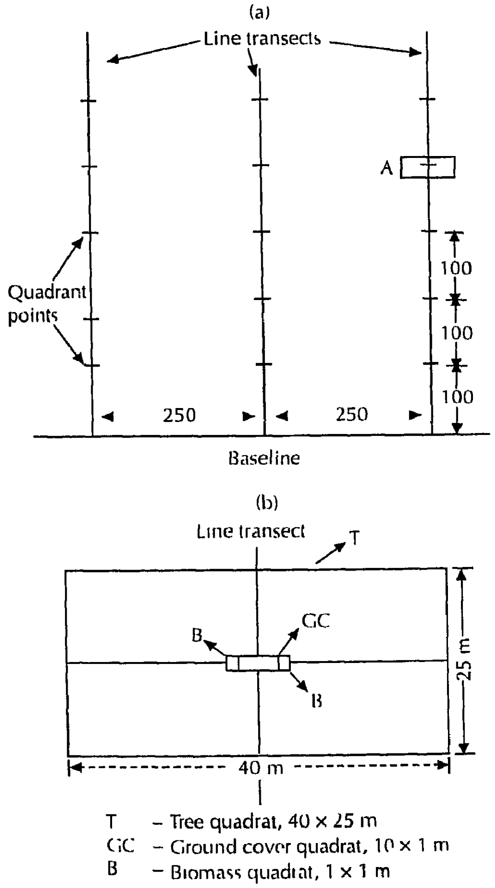
Name	Areas (Bighas)
1. Amin Chand	5
2. Tula Ram	2.5
3. Sada Ram	2
4. Surjit	2
5. Ram Rattan	1
6. Sher Singh	6
7. Baldev	2
8. Raunagi Ram (Headman)	5.5
9. Inder	5.5
10. Som Dutt	3
11. Chud Ram (Nambardar)	2
12. Gandev	4
13. Sita Ram	

Name	Areas (Bighas)
14. Ram Kishan	4
15. Palk Ram	4
16. Tala Ram	4
17. Mast Ram	8
(Nandpur)	3
18. Bhumi Dutt	8
19. Mast Ram	3
20. Dev Raj	3
21. Raungi Ram	
22. Kala Ram	2
23. Keedu Ram	2
24. Achhrso Ram	3
25. Amar Chand	
26. Moti Lal	2

Figure 8 Command area map of Kedarpur Dam

- A set of wedge prisms for recording of basal area of tree crops.
- Chalk sticks for marking tree stems during enumeration.
- Data forms, notebook, pen, pencil, eraser, scale, writing board, etc. for recording of observations.

A baseline is laid near the outer edge of the forest area and its bearing is noted with the help of a prismatic compass. Line transects running at right angles to the baseline are laid with the help of the compass at 250 m intervals (for four per cent sampling, or at 500-m interval for two per cent sampling). Nested quadrats of three sizes are laid at 100-m intervals along the line transects: (i) quadrats of 40 × 25 m size for tree species, (ii) quadrats of 10 × 1 m size for recording ground cover percentage, and (iii) quadrats of 1 × 1 m size at two ends of the 10 × 1 m quadrat for recording yield of grasses, as illustrated in Figure 9.


(a)
Line transects
A
100
100
100
Quadrant points
250
250
Baseline
(b)
Line transect
T
GC
B
B
25 m
40 m
T – Tree quadrat, 40 × 25 m
GC – Ground cover quadrat, 10 × 1 m
B – Biomass quadrat, 1 × 1 m

Enlarged view of nested quadrats at point 'A' on transect line

Figure 9 Layout of line transects (a) and nested quadrats (b) for vegetation survey

The following observations may be recorded in the respective quadrats.

(i) **Tree quadrats** (40 × 25 cm)	Enumeration of trees by species in 20 cm girth classes (0–20, 20–40, 40–60, 60–80, 80–100, over 100 cm) and 2 m height classes (0–2, 2–4, 4–6, 6–8, 8–10, over 10 m).
(ii) **Ground cover quadrats** (10 × 1 m)	(a) Percentage of area under grass cover. (b) Percentage of area under shrubs. (c) Percentage of area under blanks.
(iii) **Biomass quadrats** (1 × 1 m)	Fresh and air dry weights of fodder grasses, commercial grass, and shrubs (separately) in kg per quadrat of 1 × 1 m.

The data obtained from the survey, as above, is then compiled and analysed to get the following results.

(i) Number of trees per ha for different species for various girth and height classes see Table 5.
(ii) Status of regeneration of different tree species (number of seedlings and saplings per ha in lowest height class of < 2 m height, or in the lowest girth class of < 10 cm girth).
(iii) Number of trees per ha in the biggest girth class or the biggest height class to assess the proportion of older trees nearing maturity.
(iv) Biodiversity of the species (frequency of occurrence, etc.).
(v) Percentage of area under ground cover of (a) grasses, (b) shrubs, and as (c) blank areas.
(vi) Fresh and dry yield of fodder grasses, *bhabbar* grass (or other economic grasses) and shrubs biomass in quintals per ha.

A sample of baseline survey data is presented in Table 5.

Institution for JFM

JFM is based on the creation of a management partnership between the FD and the local community, and the process of empowering community groups is critical to the success of the programme. This process is institutionalized through formation of Resources Management Agency variously called as Resources Management Society (RMS) or Village Forest Committee (VFC), or Forest Protection Committee (FPC), etc., and is formalized through a collaborative agreement with this local institutional agency by designating clearly-defined territories for participatory management. The negotiating and institutionalizing processes are through the following steps.

Table 5. Baseline survey data of village Rajipur, Pinjore range, 1996

I. **Enumeration of tree species (No. per ha)**

No.	Species	Girth class (cm)							Height class (m)						
		<20	21–40	41–60	61–80	81–100	>100	Total	<2	2–4	4–6	6–8	8–10	>10	Total
1	*Khair*	38	133	171	190	55	—	587	19	154	224	167	22	1	587
2	*Jhingan*	5	30	32	8	1	—	76	9	21	34	10	2	—	76
3	Chhal	18	76	59	10	—	—	163	11	29	72	48	3	—	163
4	Amaltas	2	5	4	1	—	—	12	2	4	3	2	1	—	12
5	Sisham	1	5	2	—	—	—	8	2	3	1	2	—	—	8
6	*Kikar*	—	2	—	—	—	—	2	—	2	—	—	—	—	2
7	*Neem*	5	7	—	—	—	—	12	5	4	3	—	—	—	12
8	Miscellaneous	47	42	10	10	1	—	110	27	51	20	9	2	1	110
	Total	116	300	278	219	57	—	970	75	268	357	238	30	2	970

II. ***Biomass assessment***

(i) Yield of fodder grasses – 1.923 tonnes/ha
(ii) Yield of *Bhabbar* grass – 7.372 tones/ha
(iii) Biomass of shrubs – 1.700 tonnes/ha

Total – 10.995 tonnes/ha

III. ***Ground cover***

(i) Area under fodder grasses – 17%
(ii) Area under Bhabbar grass – 28%
(iii) Area under shrubs – 48%
(iv) Area under blanks – 7%
– 100%

Step 1. Preparation of range profile

Range profile is a visual inventory of administrative, ecological, social, and management information of a forest range area. It is a tool designed to help the forestry staff to identify and plan strategic actions needed to accelerate the transition to JFM. The process of preparation of a range profile enables the forestry staff to develop a common understanding of the forest conditions, forest-user communities, forest-use patterns, and management issues existing in a particular range, thus facilitating the identification of areas for formation of RMS or FPC, and prioritization of JFM objectives for a forest range.

The output of range profiling is a set of maps depicting (i) administrative boundaries of the division/range/blocks/beats/compartments, etc., marked on a toposheet of 1:50 000 or 1:25 000 scale, (ii) condition of vegetation, (iii) forest user groups or communities in the area. The names of new hamlets, villages or migratory communities not shown in toposheet are also given. Villages with active RMS or FPC are suitably marked in the maps, (iv) management issues like illicit fellings, heavy grazing, fires, encroachments, and inter village conflicts over forest use (Figure 10).

Sketch mapping methods or procedures described in the preceding paragraphs are used for preparing of range profile.

Range profiles can also be prepared as tabular statements showing informations on demographics, resources, needs assessment, and range/beat level microplan of the JFM areas, as is being followed in West Bengal (Appendices III to VII).

Step 2. Identification of JFM areas

For identification of JFM areas, an attempt should be made to group user communities that interact around common patches of forest. Management area identification should be cross-checked with forest user communities in the area to ensure that all stake-holding communities are included in the group.

This exercise involves preparation of a range map showing location of (i) active registered RMSs, (ii) inactive registered RMSs, (iii) active unregistered RMSs, (iv) communities that have shown interest during range profiling for formation of new RMSs, and (v) areas that have feasibility or potential for formation of RMS in the near future.

Step 3. Dialogue with village community for motivation

The process of motivation is initiated by explaining the objectives and benefits of JFMP to the villagers, developing their interest through participatory information gathering, sketch mapping, preparation of village profile, transects, baseline survey, etc., and visit to successful project areas (Box 14). A series of meetings is arranged to explain the programme to local households. Meetings with individuals and small

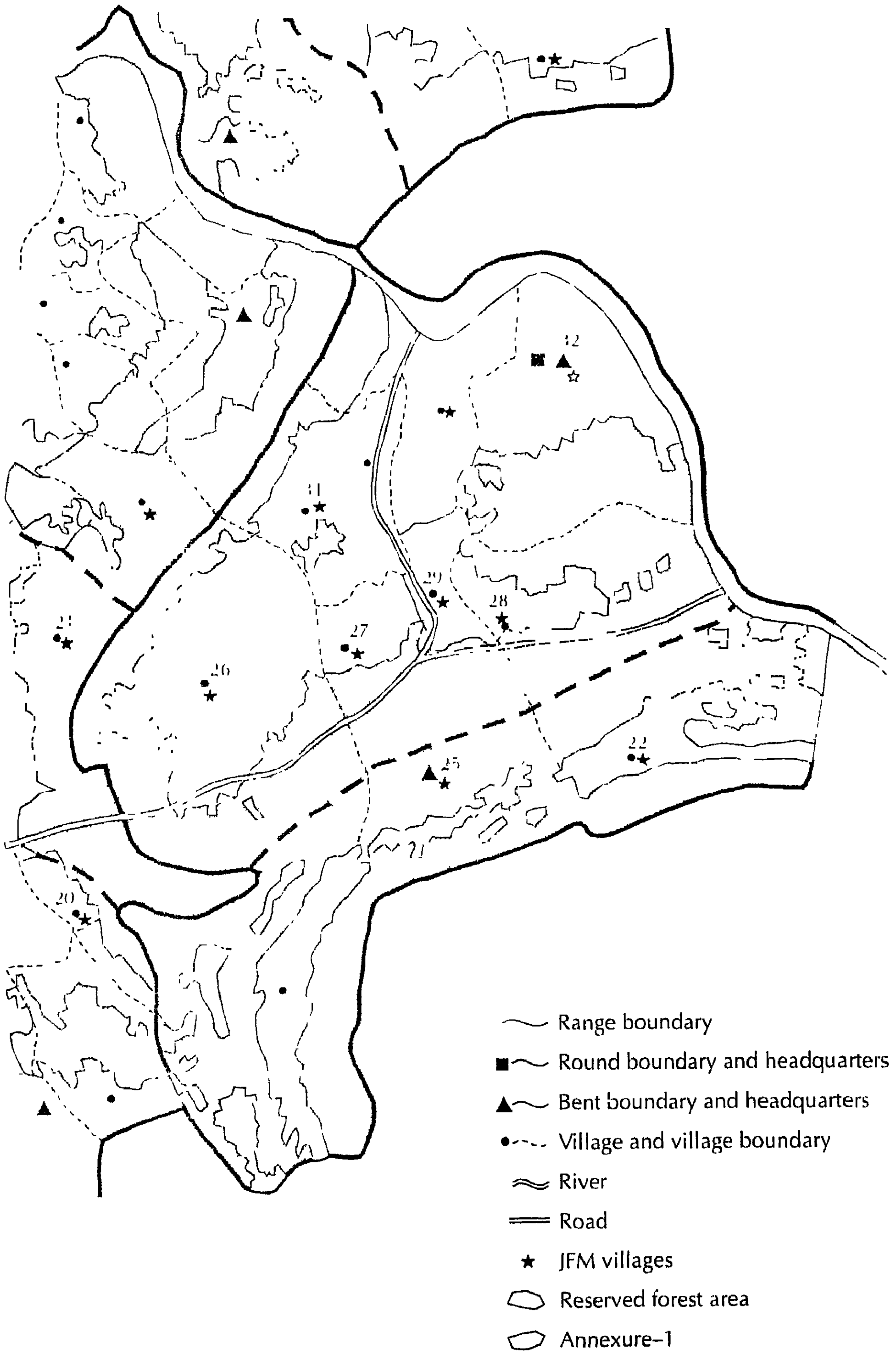

28
27
26
25
22
21
20
Range boundary
■ Round boundary and headquarters
▲ Bent boundary and headquarters
● Village and village boundary
River
Road
★ JFM villages
Reserved forest area
Annexure-1

Figure 10 Range profile of JFM areas, Lunavada Taluk, Gujarat
Source: Viksat (1995)

Box 14

Basic profile of selected forest protection committees in Umaria division (Madhya Pradesh)

Particulars	Villages					
	Pataur	Patohara	Siguri	Lakhoomar	Bhadari	Dhatoora
1. **Population (no.)**						
General	163	88	723	61	–	486
SC	24	–	440	–	–	58
ST	425	118	584	24	392	154
Total	612	206	1747	85	392	698
2. **Livestock**						
Population (no.)	876	613	1428	86	601	810
3. **Literacy Rate**						
(Percentage)	22	15	14	6	7	31
4. **Agriculture Land** (ha)						
Irrigated	13.55	33.50	52.70	–	4.10	40.00
Unirrigated	107.06	231.30	240.60	31.40	180.40	170.00
Total	120.61	264.81	293.30	31.40	184.50	210.00
5. **Date of FPC formation**	03.05.92	24.05.92	06.09.94	01.11.94	07.01.94	05.03.94
6. **Members of FPCs** (no.)						
Male	25	74	32	20	15	21
Female	5	–	–	–	–	–
Total	30	74	32	20	15	21
7. **Area Protected** (ha)						
Protected Forest	–	720	200	510	110	350
Reserve Forest	950	–	–	–	–	–
Total	950	720	200	510	110	350

Source: Gaur K K (1995)

groups would help in preparing the background for a general meeting of the village. All the social groups in a village including women and weaker sections should be contacted separately to know their viewpoints and needs.

Step 4. Identification of catalysts, and review of resources management options

Villagers are often dependent on forest for fulfillment of their immediate basic needs. Catalysts need to be identified, quantities assessed, and options of management discussed to provide significant benefits on sustainable basis. Many NTFPs like fodder and economic grasses provides significant benefits, and irrigation water is generally a priority. Timber may also be so managed to produce a steady flow of annual or short-duration periodic revenues. The possibility of the flow of benefits and the FD undertaking specific activities in an area should not be discussed with the villagers unless there is a degree of certainty that the resources will be available.

Step 5. Discussion

During the motivation phase, the villagers are encouraged to hold discussions amongst themselves on various issues concerning JFMP. Once a village has been identified as a potential village for introducing JFMP, a large general meeting of the village could be organized. The maps and sketches made during PRA exercises and data collected during baseline survey could be used in the meeting as a way of highlighting the existing problems. It may be a good idea to have these maps and data sheets on large posters along with key discussion issues culled from the checklist. See boxes 15a, 15b, and 15c for a sample of compiled data for a few *van panchayat* villages in Uttar Pradesh.

It must be stressed that even if many suggestions regarding options have been thrown up during the exploratory walk by the appraisal team around the village, it is worthwhile for the team to have discussions with each group in the village using the data collected and maps or diagrams prepared. Each social group could be probed on the implications of the option it suggests. As a result of this exercise, the appraisal team will prepare a list of options suggested by different social groups for each problem.

The discussions with different social groups will have to be followed up by discussions in a general body meeting or assembly of all adult members of the village community where the local NGO, the FD's field staff and villagers should try to discuss the problem of unclear responsibilities, degradation of forest lands, declining production and how every one loses from poor management. The following points should be discussed thoroughly.

- Options for management of resources.
- Priority ranking of development needs and opportunities by keeping in view the varied operational and financial constraints.
- Equitable sharing of benefits.
- Size, location, and boundary of the forest area which the community will be responsible for management. Identify the area on the ground and explain implications of its legal status (village/protected/reserved forest).
- The rules and regulations framed under State's JFM resolution criteria.
- Rights and responsibilities of FD and the villagers.
- The role which villagers will have to play in protection and management of forest areas.

Box 15a

Profile sheet of *van panchayats* in Bageshwar Forests, District Almora (Uttar Pradesh)

Socio-economics

S No.	Village/Particulars		Bhatadiya	Chatiyani	Gannigaon	Dyonai	Thakla	Sampur	Pingio	Simkhet	Laskarkhet	Ratyuda
1	Household No		205	50	101	173	40	10	170	87	48	29
2	Hamlet No.		4	5	7	6	4	—	7	4	5	—
3	Caste (% of hh)	Dominant	Thakur 80%	Thakur 80%	Thakur 57%	Thakur 73.4%	Brahmin 80%	Thakur 100%	Thakur 53%	Thakur 90.8%	Thakur 77%	Brahmin 66%
		Others	Harijan 20%	Harijan 20%	Brahmin 23% Harijan 20%	Harijan 20.2% Brahmin 6.4%	Thakur 20%	—	Harijan 26% Baba 21%	Brahmin 5.7% Harijan 3.4%	Thakur 22.9%	Harijan 34%
4	Livelihood (% of hh)	Agri	100%	100%	100%	80%	100%	100%	74%	100%	100%	100%
		Service	28%	82%	28%	100%	52%	40%	48%	24%	70.8%	72%
		Labour	14%	—	—	20%	—	—	26%	5.7%	77%	—
		Skilled task	—	20%	—	20%	—	—	—	—	10%	30%
		Others	Cottage 14%	—	Wool 29%	—	—	Shops 10%	—	Shops 2.3%	—	—
5	Irrigation	Gool	Partly	—	Yes	—	Yes	Yes	Yes	—	—	Yes
		Canal	Partly	—	Yes	Yes	Yes	Yes	Yes	—	—	Unfunctional
6	Electricity		—	—	Yes	Yes	Yes	Yes	Yes	Yes	Partly	Yes
7	Post Office		—	—	—	Yes	—	—	Yes	—	—	—
8	Primary School		Yes	Yes	Yes	Yes	Yes	—	Yes	Yes	—	Yes
9	Water taps		Insufficient	Yes	Yes	Unfunctional	Unfunctional	—	Insufficient	Yes	Insufficient	Yes
10	Primary Health Centre		—	—	—	Yes	—	—	—	—	—	—
11	Road	Kucha	—	Yes	—	Yes	—	—	Yes	Yes	—	—
		Pukka	—	—	—	—	—	—	—	—	Yes	Yes

Source TERI (1995)

Box 15b

Profile sheet of *Van Panchayats* in Bageshwar forests, district Almora, Uttar Pradesh

Forest Resource Dependence

S No.	Village/Particulars		Bhatadiya	Chatiyani	Gannigaon	Dyonai	Thakla	Simpur	Pingio	Simkhet	Laskarkhet	Ratyuda
1	Reserve Forest (high/ medium/low)	Fuelwood	High	High	High	High	High	High	High	High	High	No RF
		Fodder grass	High	Low	High	Low	High	High	High	Medium	High	
		Fodder leaves	High	High	High	High	Low	High	High	High	Low	
		Pirul	High	Medium	High	High	High	Medium	High	High	High	
		Timber & small timber	High	High	High	High	High	High	High	High	High	
		Grazing	Medium	Medium	High	Medium	High	High	Medium	Low	High	
2	Civil forest		—	—	—	Degraded Grazing	—	—	—	—	—	Degraded grazing Fuelwood (medium)
3	VP Forest	Fuelwood	High	Low	—	Low	Low	Low	High	Low	Low	High
		Fodder grass	Medium	High	Medium	High	Medium	Low	Medium	Medium	High	High
		Pirul	Medium	Medium	—	Medium	Medium	Medium	Low	Medium	Low	High
		Grazing	Low	High	Medium	Low	Medium	High	High	High	Low	High
		Timber & small timber	Low	Medium	—	Low	Low	Medium	Medium	Low	Low	High
		Others	—	Oak, Babila	—	—	—	—	—	—	—	—

Source: TERI (1995)

Box 15c

II. Comparative dependence on reserve forest and *van panchayat* forest

S No.	Resources Base/usufruct	Reserve forest				VP Forest			
		High	Medium	Low	Unavailable	High	Medium	Low	Unavailable
1	Fuelwood	90%	--	--	10%	30%	--	60%	10%
2	Fodder grass	60%	10%	20%	10%	40%	50%	10%	--
3	Fodder leaves	70%	--	20%	10%	10%	--	--	90%
4	Pirul	70%	20%	--	10%	10%	60%	20%	10%
5	Timber & small timber	90%	--	--	10%	10%	20%	60%	10%
6	Grazing	40%	40%	10%	10%	50%	20%	30%	--
7	Babila	--	--	--	--	--	10%	--	--

Source: TERI (1995)

- Formation of a RMS or FPC as a precondition for participation in JFMP.
- Universal membership and proportionate representation according to social groups in the Management Committee (MC), women representation, and account keeping, etc.
- Constitution of society/committee, and bye-laws (time and space restrictions, fines, fees, sharing of benefits, etc.).
- Preparation of a microplan and its implementation.

It is important to avoid lecturing when talking or discussing with people. Allow the villagers to speak and express themselves fearlessly. Mapping as an interactive exercise can also stimulate discussion. Care should be taken to allow ample time for free and frank discussion on various options, implications, constraints, etc. for the community to make selection of options as well as the priorities.

Step 6. Resolution for formation of society

Once the problems have been discussed, the field staff can introduce the possibility of JFM through the village by forming an RMS or FPC and negotiating a management contract with the FD. It should be emphasized that formation of RMS or FPC and acceptance of responsibility for forest protection are prerequisites for resource access. Field staff should also emphasize that the FD will fulfill its obligations if a suitable management agreement can be reached. The constitution and byelaws of the RMS or FPC should be discussed in detail to make its implications very clear to all the villagers present in the meeting. The field staff and the NGO may assist the villagers in arriving at a consensus for formation of an RMS or FPC, in a careful manner. The villagers may then pass a resolution for formation of the RMS or FPC.

Step 7. Election of governing body

For the day-to-day functioning of RMS or FPC, a MC or Executive Committee (EC) is elected in a general body meeting of the RMS. The MC or EC is usually elected for one year and has the following composition.

- President
- Secretary
- Cashier
- Executive Members (4 to 8 in number)

There should be at least two women in the MC or EC and due representation should be given to all sections of the community. Local FG or Block Forest Officer could be the ex-officio member or Joint Secretary of the governing body.

Step 8. Demarcation of boundary of the RMS's forest

When the RMS or FPC so constituted has demonstrated an ability to control and protect the forest, the field staff and local NGO should organize a meeting of the RMS or FPC with neighbouring villages so as to reach an agreement for mutually acceptable boundaries of their RMSs or FPCs. It is advisable to invite other user groups also to this meeting, such as members of villages that have traditionally been using the same forest area, but do not border it, or migratory communities that are seasonally dependent on this forest (Figure 11). Efforts should be made to involve all user groups at this stage so that workable forest use agreements can be negotiated to avoid the likely conflicts in the future. When conflicting area claims are put forth by neighbouring villages or communities, a senior field staff or an NGO should visit the affected communities to discuss and attempt to resolve the issue.

In hilly areas, the boundary line between any two RMSs should as far as possible follow the ridge line so as to avoid trespassing into each other's area as well as to conform to the concept of management of natural resources on watershed basis. This will require some give and take by the parties concerned, and the forestry staff or NGO will have to play a pivotal role in reaching an amicable settlement of area demarcation.

After a preliminary boundary agreement is reached between the communities concerned, the field staff should prepare demarcation maps, get them signed by authorized representatives of those communities and carry out demarcation on the ground accordingly by erecting suitable boundary markers or pillars in the presence of their representatives.

Step 9. Registration of society

The RMS or FPC constituted as above is then registered in the office of the Registrar of Societies and Firms under the Societies Registration Act (1860), and a Certificate of Registration is thereby obtained. Figure 12 depicts the successive steps for participatory planning, implementation and evaluation.

Participatory monitoring and evaluation

Participatory monitoring and evaluation (PME) serves a dual purpose. It is a management tool which enables people to improve their efficiency and effectiveness. It is also an educational process in which participants increase their awareness and understanding of the various factors which affect them, thereby increasing their control over the development process. PME is a part and parcel of the whole development cycle shown in Figure 13.

A simple system of monitoring progress is shown in Tables 6 and 7. These tables monitor the progress made by a group in various aspects of a small-community forestry project. The chart shown in Table 6 is

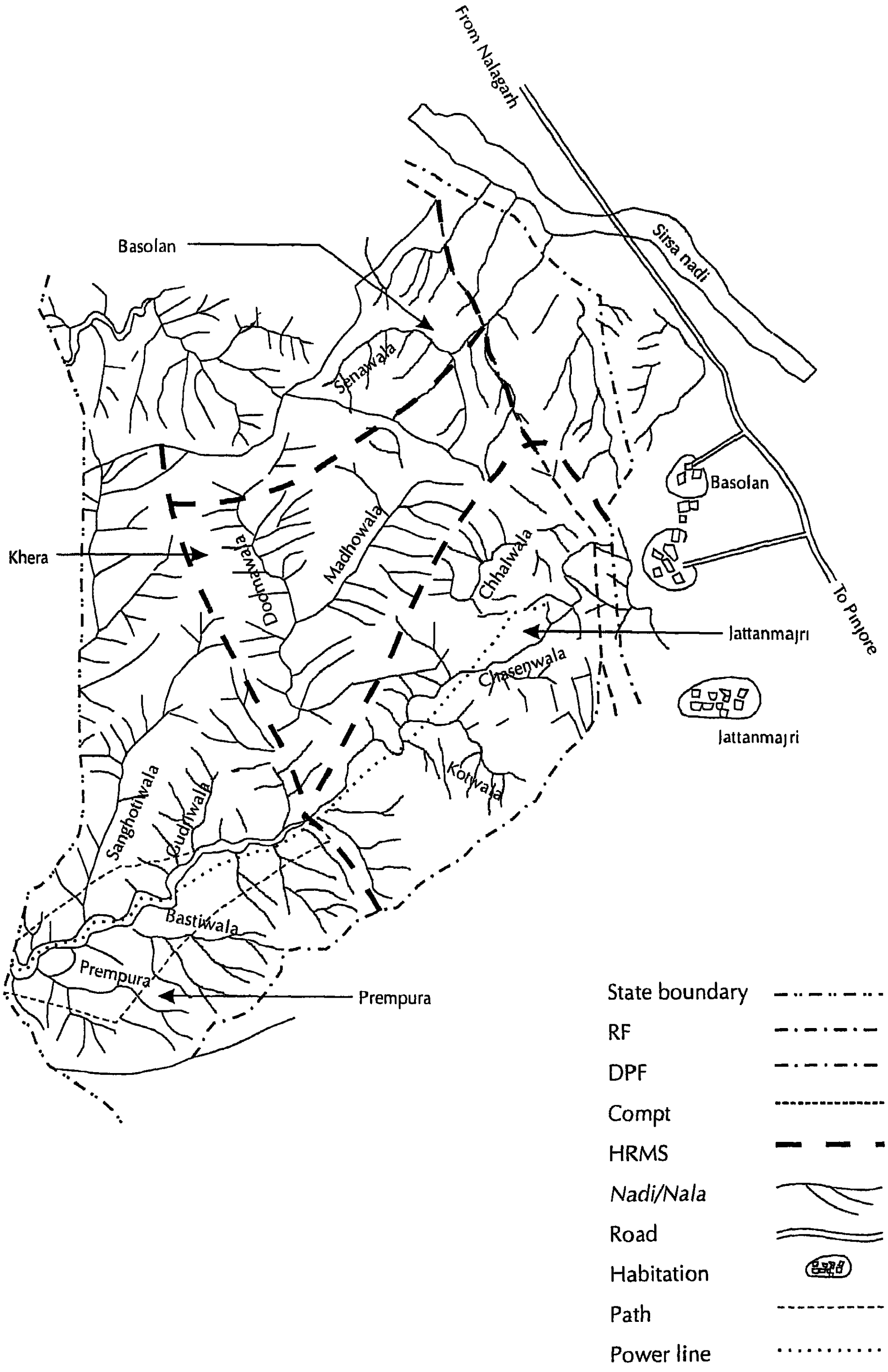


Figure 11 Boundary demarcation map, Prempura Forest Beat, Haryana Shivaliks

generally used each month for groups unused to assigning a numerical value to their achievements. After a few months, one chart as in Table 7 may be made for several months.

Training for acquiring skills

When JFM programme is introduced into an area (Forest Division, Range, etc.), the local field staff may not be conversant with various concepts, processes, procedures and tools of participatory microplanning mentioned or described in this manual. In such cases it will be highly desirable that frontline staff of FD as well as representatives of the forest communities are imparted suitable practical training in JFM and microplanning related concepts or processes, so that they are well equipped with the required skills for conducting those activities and programmes on their own. The JFM process of West Bengal is shown in Box 16. Guided tours of the staff and villagers may be organized to areas where JFMP is already in operation so as to impart on-the-spot practical training to them regarding JFM and microplanning. Unless they have attained requisite proficiency in various skills, staff should not be entrusted with working on participatory microplanning all by themselves. It will always be desirable to depute a fully trained or experienced staff as a team leader-cum-guide for JFM related exercises or activities in an area.

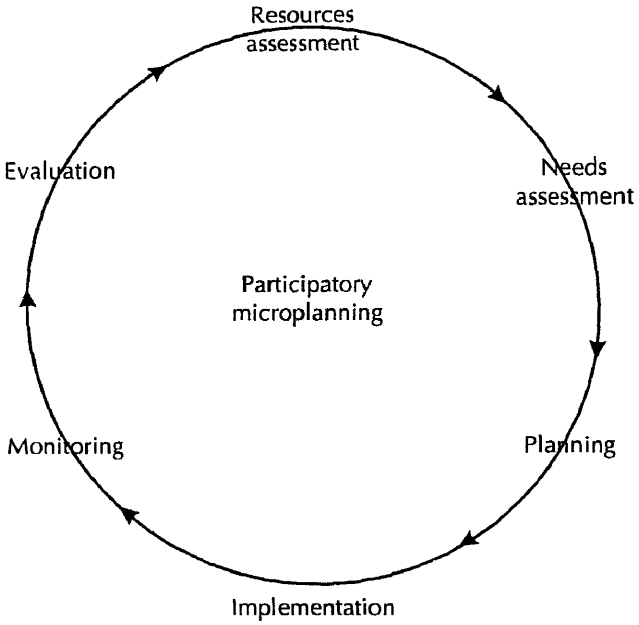


Figure 12 Successive steps for participatory planning, implementation and evaluation
Source: Theis J, Grady H M (1991)

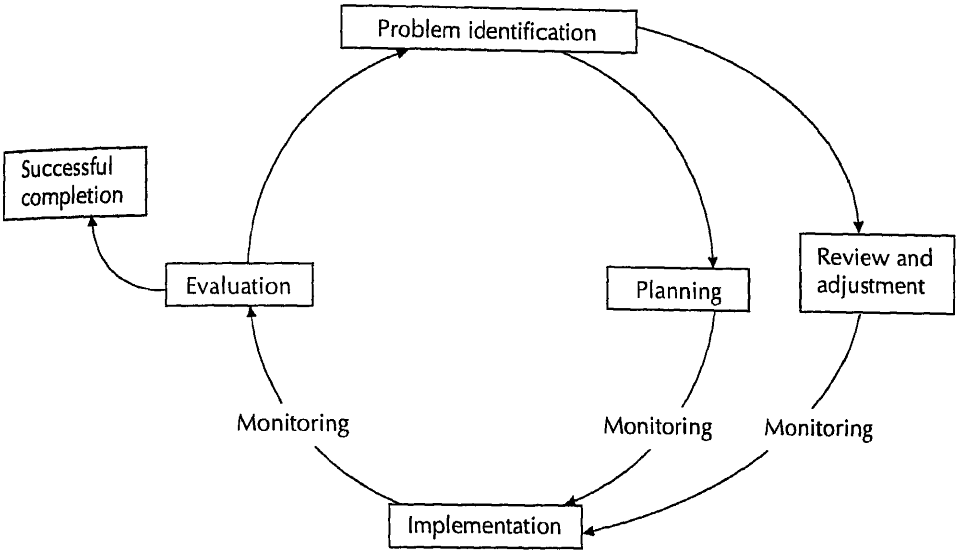


Figure 13 A development cycle
Source: FAO (1995)

Table 6 One month chart for monitoring progress in a community forestry project

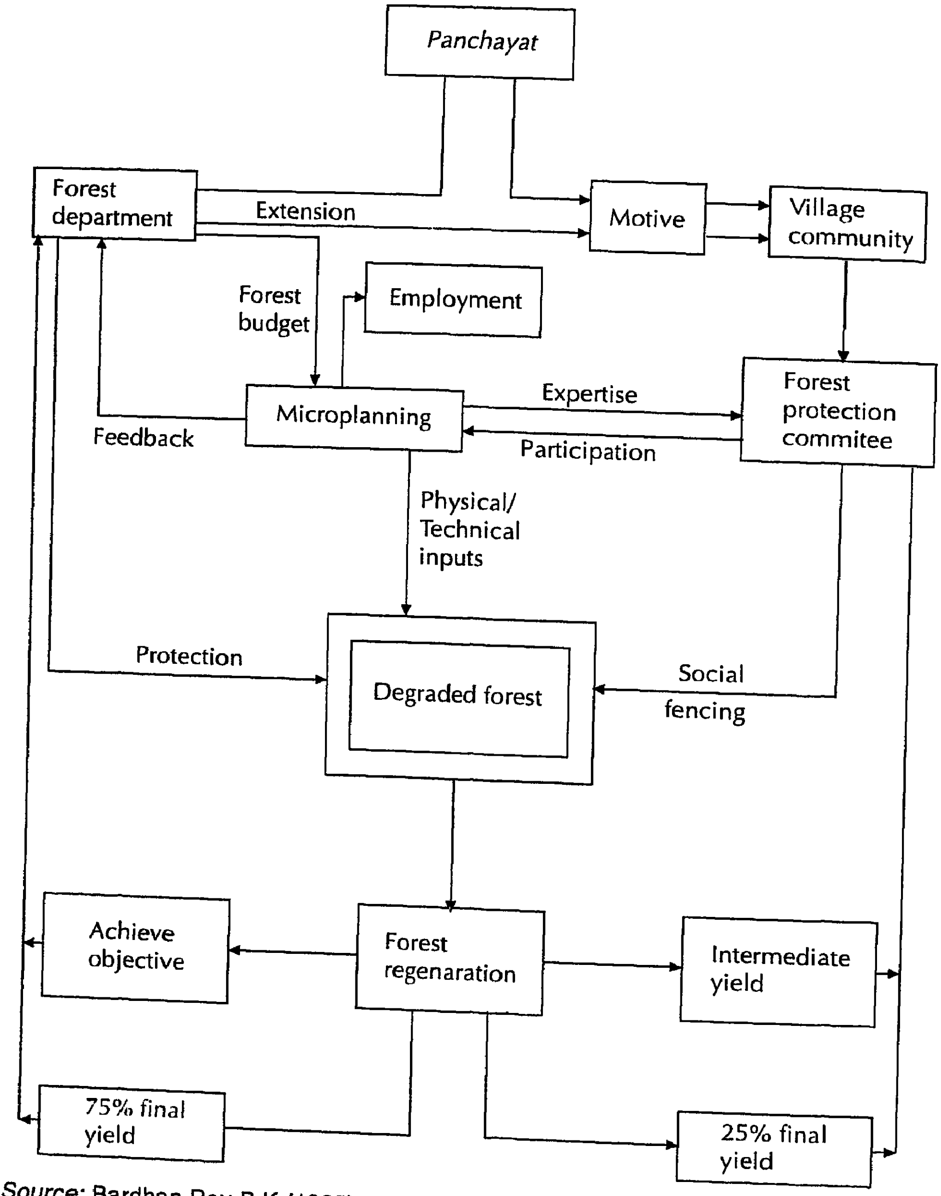
Community forestry monitoring chart June	Nursery	Tree planting	Fertilizer	Extension support	Group meeting	Loan repayments	Fuelwood	Fodder	Fruits	Soil improvement	Visitors
5			✓	✓	✓						
4	✓										✓
3							✓	✓		✓	
2									✓		
1		✓				✓					

Table 7 Six months for those who are used to using a rating scale

Community forestry monitoring chart		Nursery	Tree planting	Fertilizer	Extension support	Group meeting	Loan repayments	Fuelwood	Fodder	Fruits	Soil improvement	Visitors
5	January	3	3	4	5	4	2	2	3	4	3	1
4	February	3	4	4	4	4	3	3	3	4	4	2
3	March	4	4	3	5	5	3	3	4	4	3	3
2	April											
1	May											

Box 16

Matrix of participatory management in West Bengal



Source: Bardhan Roy B K (1995)

PROCESS AND FORMAT FOR PREPARATION OF MICROPLAN

The most important step in preparing a microplan for JFM entails identification of potential villages where people are dependent on forest resources and where there is reasonable scope for participation of the community in the JFMP. The process can be initiated by the field staff of FD and the NGO by preparing a Range Profile to select the prospective communities and by establishing a contact with the villagers through group meetings and discussions, etc., followed by PRA exercises and steps for:

(i) rapid exploratory assessment or surveys to collect demographic and resource data;
(ii) assessing the expectations of the people;
(iii) assessing current resource condition and usage patterns, and their possible adverse impacts on resource regeneration;
(iv) presenting the whole picture of the status of the ecosystem, priorities and perspectives of different social groups to the village community and initiate the formation and functioning of a suitable RMS or FPC;
(v) preparing a mutually acceptable plan for sustainable flow of benefits to the community consistent with the conservation and adequate regeneration of resources; and
(vi) scrutinizing and ratifying of the microplan by the Divisional Forest Officer (DFO) or his representative with or without any modifications, in consultation and agreement with the RMS/FPC of the village.

It may be emphasized here that planning has to be a 'flexible' process sensitive to local context and involving the local people. The forestry staff, the technical experts and NGOs should all serve as motivators, facilitators, and technical advisors with the actual prioritization required for decision-making and implementation passed on to the local people.

Planning process

The planning process entails two basic approaches: (i) data gathering through PRA exercises, base-line surveys and sketch mapping, etc. (discussed under previous chapter) and (ii) use of data in analysis and planning by arriving at mutually acceptable decisions through discussions in the general body meeting of the RMS/FPC for selection of management options, priorities and time schedule, etc. (Box 17)

Box 17

Participatory processes for microplanning
The Microplan should be prepared using a participatory process (using PRA). This means that users are involved at all stages in its preparation. The users should:

- describe their forest resource;
- state their objectives for each part of the forest;
- describe the operations they wish to carry out;
- set out the timetable for these operations; and
- carry out forest management operations.

Field staff should:

- assist and facilitate in the process of plan preparation;
- provide any technical advice required by the users;
- arrange for the plan to be typed and copied at the District Forest Office;
- assist the users in carrying out management operations; and
- monitor the implementation of the microplan.

Source: Branney P, Dev O P (1994)

The following steps, more or less, form the basis of developing a microplan.

(i) Community and area identification.
(ii) Data gathering.
(iii) Consultation and problem analysis.
(iv) Identification and negotiation of management objectives.
(v) Evaluation, selection, and prioritization of management options.
(vi) Preparation of an agreed site-specific microplan.

The six steps of planning process are discussed in the succeeding paragraphs.

Step 1. Community and area identification

The community may comprise a single user group or hamlet or a number of user groups in a village, or even two to four adjacent villages who use the same resource. Determine who are the stakeholders for the forest resources, their rights of traditional use, demands, and needs from the area. This is done by using stakeholder analysis (during village sketch mapping) and other PRA tools so as to identify boundaries of the area to be managed by a single RMS/FPC. Where a community is not organized into a RMS or FPC, the institution building process will have to be undertaken simultaneously with area identification. The area to be used or managed by a community should be fully described and shown clearly on a map. As far as possible, the demarcation boundary between any two villages/RMSs should follow the ridge line in hilly areas to conform to the concept of resource management on watershed basis. The various steps outlined in the previous chapter for establishment of the 'Institution for JFM' may be followed for formation of RMS or FPC for the area.

Step 2. Data gathering and resource mapping

Basic data regarding forest resources and demographics of the community are collected by reviewing the published literature (maps and records of FD, census reports, etc.) as well as through various PRA exercises mentioned in the previous chapter. Some of the aspects on which data could be collected is the extent and type of area (resource maps); present condition, production and usage levels of different resources (baseline survey); demand and needs of people in terms of products, benefits, usage (resource flows, seasonal calendars of different activities, tree matrix) and assessment of gap between demand and supply (Box 18). Limiting factors and constraints in the use of resources are described in detail.

Box 18

Mode of collection and income generation from NTFPs in Limbi (South Gujarat)

Species	Forest product/ Part	Period of gathering	Quantity gathered trip/household	No. of gatherers	Total no. of trips/ year	Price/Unit
Kharaya	Gum	April–May June	3/4 kg/	20 (5%) household	25	Rs 25/kg
Mahua	Flowers	April 1–15	6–7 kg/	192 (@ 3/family for 64 hh)	15	Rs 2.5–3.5/kg of dry flowers
Mahua	Seeds	May 1–30	2–3 kg/	128 (@ 2/family for 64 families)	15	Rs 10/kg FDC agent (but for home consumption)
Karanj	Seeds	April 15– May 15	2–3 kgs/	60	15	Rs 3/kg
Tendu	Leaves	May 1–15	40–50 bundles/	135 (@ 3/family for 45 families)	15	Rs 10/50 bundles

Source: Society for Promotion of Wastelands Development (1992)

Step 3. Consultation to prioritize resource needs and problem analysis

What are the problems relating to the resources use and the ability of the area to meet the particular needs or potential needs of the community? What are the causes of these problems? Problems involve balance between the supply characteristics of the area (i.e., what there is now and what the productive potential is), the conflicting demands or needs of different user groups and the constraints in use or development of the resources. Box 19 provides a set of norms for assessment of demand for forest produce. Field staff or NGO have to play an important role in facilitating this process. Marginalized community members should be encouraged to offer their opinions. Women, particularly those from lower castes and tribes, often identify drinking water, fuelwood, fodder, and fruit trees as important resources whereas men, particularly those from farming community, may give priority to irrigation water, timber species, and infrastructural development. Some individuals may openly oppose the JFMP if they feel that it will not benefit them directly. Because differences in perspectives are bound to exist, focus-group discussions are essential for acceptable prioritization of resource

Box 19

Demand and supply estimation norms for human and cattle population

I. Demand

Product	**Average requirement**
Fuelwood	1 kg per head per day or 5 kg per family (of 5) per day or 1.8 tonnes per family annually
Fodder	(i) Buffaloes 20 kg/day (ii) Cows 15 kg/day (iii) Goats/sheep 2 kg/day (iv) Camels 20 kg/day
Poles	3 poles per head per annum
Timber	0.2 m^3 per head or 1.0 m^3/family (periodic need)

II. Supply

Product	**Average production**
Fodder	(i) Before protection (degraded forest) 0.5 tonnes/ha (ii) After protection & rehabilitation 4.0 tonnes/ha
Bamboo Poles	4 Bamboos per clump per year
Fuelwood	About 40 tonnes per ha of mature plantation

needs. Discussion on differences in priorities may bring out sensitive social problems of the community.

Problem solving may be carried out by using problem-tree analysis and close consultation between the user groups, NGO, and the forestry staff. The baseline data from preliminary PRAs and sampling survey is also presented in the general body or appraisal team meeting of the community. Based on these, a problem tree can be derived which will help identify and prioritize the site-specific problems to be addressed in the microplan.

Step 4. Identification and negotiation of management objectives

Objectives are derived from the problems identified in Step 3 and their priorities as perceived by the people. Prioritization of objectives may have to be negotiated where conflicts of interest between different user groups occur. The result of negotiations will be an agreed site-specific objective (Box 20).

Step 5. Evaluation, selection, and prioritization of management options

Based on the agreed objectives listed in Step 4, and keeping in view the funds available, the activities and operations needed for the microplan are identified and prioritized through consultations by the community with the concerned officials or the NGO (Box 21). The final choice may cover a broad range of activities including:

- control of open grazing, fires, illicit cutting, encroachments, etc.;
- soil conservation measures which include construction, maintenance of water-harvesting dams and water distribution systems;
- establishment of village nursery;
- afforestation and planting of grasses, fruit trees, medicinal plants, fodder trees, etc., and maintenance of existing plantations;
- tending and thinning in forest area or plantations;
- collection or harvesting, processing and marketing of various products; and
- welfare and development activities in the village, etc.

A simple way to prioritize the identified management options could be to undertake a priority matrix ranking as shown in Table 8.

Step 6. Preparation of an agreed site-specific microplan

A site-specific microplan will then be prepared by the forestry staff based on the management objectives, options, and operations selected by the people and by putting together the background information on the community, area, justification for proposed choice of activities, and a cost estimate of operations, time schedule and maps, etc.

Box 20

Management issues in NAM SA (North Thailand)

	Problem	Strategy
1.	Upland deforestation	• No clearing of steep slopes or ridgetops • Agroforestry, reforestation • Protection to enhance natural regeneration • Shift ridge and upland swidden to lower lands • Ban chainsaws
2.	Soil erosion	Soil and water conservation practices (e.g., terracing, agroforestry, alley cropping, mulching, vegetative bunding, contour farming)
3.	Declining agricultural yields	• Shift upland fields downslope • Contour farming, terracing, crop rotation • Irrigation • Decrease pesticide use
4.	Decline in water quality and quantity	• Strict headwater forest protection • Natural forest regeneration and reforestation/ agroforestry • Soil and water conservation techniques • Minimize upland grazing pressure • Reduce pesticides
5.	Chemical pollution in streams (pesticides, fertilizer)	• Reduce pesticide use and substitute natural biocides • Adopt organic farming with integrated pest management techniques • Plant mixed tree crops, including nitrogen-fixing species • Reduce chemical fertilizer, use green manure
6.	Forest fires	• Voluntary community patrols, increase in dry season • Firebreaks around fields, fines for escape from swidden
7.	Overgrazing and livestock crop damage	• Ban free 'open-access' grazing, adopt stall feeding • Fencing of ecologically vulnerable areas • Regulate rotational grazing

Source: Poffenberger M, McGean B (1993)

A general body meeting of the RMS or FPC is convened ensuring presence of all user-groups and social groups in the village. The representative of the Forest Department (RFO and SDO) or the local NGO then presents a summary of the microplan, also with the relevant maps, charts, etc.; discusses the boundaries of the forest land covered by the proposed microplan; explains in detail the methods of treatment or management, development options and opportunities, rights and

Box 21

Innovation assessment

- is the final stage of the analysis of the group discussion,
- *helps to assess and prioritize possible options for development activities* according to,
  - amount of benefit for the community
  - degree of community participation
  - sustainability of the project or activity
  - equitability of distribution of benefits
  - cost to implement
  - time it takes before community benefits
  - technical feasibility

After deciding on the innovations or activities, the team completes an innovation *information sheet for each innovation, answering the following questions:*

- What is the innovation?
- Why is it important?
- Who will be involved in its implementation?
- Who will benefit from it?
- Where in the community is it to be implemented?
- When is it to be implemented?
- How is it to be implemented?
- How much is it going to cost?
- To rank the criteria a scale of **least good**, **medium**, and **best** is used, represented as +, ++ and +++ (the more plus gives the better). It is completed *horizontally, row by row, and activity by activity.*
- In this way the assessment remains visually oriented; participants are able to glance across rows and make comparisons
- Once the assessment is completed for all proposed innovations they should be ranked in terms of priority for further study or implementation

Source: Theis J, Grady H M (1991)

responsibilities, material or technical support from FD, potential constraints and problems; and identifies disagreements, if any. Representatives from peripheral village communities and institutional leaders are also invited to attend this meeting. Compromises and adjustment are made to accommodate community needs or capacity constraints or valid objections, and a consensus is reached for participatory management of the forest resources. The microplan is then amended accordingly to prepare an acceptable final plan document, as well as manual Geographic Information System (GIS) and Action Plan sheets (Box 23), for direct use by the community, as explained in the succeeding paragraphs. Period of the microplan is usually kept as five years and time schedule of different activities or operations is carefully worked out keeping the working capacity of the community in view.

Table 8. Example of a priority matrix

Innovation or project	Benefit for community	Community participation	Sustainability of innovation	Equitability of benefit	Cost to implement	Time to benefit	Technical feasibility	Feasibility score	Priority
Construction of dam	+++	++	++	+++	++	+++	+++	18	A
Afforestation	++	+++	++	++	++	+++	++	16	C
Pasture development	+++	+++	++	+++	+	++	+++	17	B
Repair of road	++	++	+	++	+	+	++	11	D
Office room	+	+	++	++	+	+	+	9	E

Least good + ++ +++ Best

Source: Theis J, Grady H M (1991)

Ratification and implementation of microplan

The various steps involved in ratification, sanction, and implementation of microplan are given below.

Step 1. Compatibility of microplan with working plan and its endorsement by Forest Department

The draft microplan prepared jointly by the community and the local forest staff is reviewed by the RFO or SDO in terms of technical and financial feasibility as well as its relevance in meeting community objectives and dealing with site-specific problems. In case of any doubt, the DFO may also be consulted for his advice in the matter. Special care should be taken to ensure that the activities and treatments proposed under the microplan are in no way contradictory to the prescriptions of the Working Plan (WP) of the Forest Division concerned. In case of any likely deviation from the WP prescriptions, necessary prior approval of the competent authority should be obtained to avoid any complication or problem at a later date.

The draft microplan so checked will then be discussed fully in the general body meeting of the RMS/FPC and once the negotiation process is completed and consensus reached on the final draft of the plan, and all parties have agreed in principle to the plan, the final agreement can be made which would specify the terms and conditions of the Participatory Management Agreement. The advantages with group decision making process are presented in Box 22. The agreement will lay down clearly the duties and responsibilities of the RMS/FPC and the FD; profit and benefit sharing, accounting and audit arrangement, monitoring and evaluation aspects, conflict resolution and arbitration, etc. An example of the likely format of an agreement for participatory management of village common lands is given in Appendix IX. The agreement for JFM in Government forests may be similarly drafted with suitable modifications.

Maps may be useful to ensure that all parties clearly understand the agreement. These maps need to show activities that the Society has agreed to undertake and the responsibilities of the village to protect and manage that area (Box 23).

Within the legal framework of this agreement, the RMS or FPC will have responsibilities for general maintenance of the water dam system; maintenance and protection of plantations, dam catchment, soil conservation structures and the forest area in general; formulating rules for protection, equitable collection and distribution of usufructs and management of funds generated from use/sale of forest products; and maintenance of records and accounts, etc.

Based on the remarks or recommendations of the RFO or ACF or SDO, the Joint Management Unit (JMU) will process the plan document for approval by the Deputy Conservator of Forests (DCF).

Box 22

Group decision-making
Group decision-making is a process by which an organization analyses situations and problems and gives appropriate, feasible and practical solutions.

Qualities of a good decision
Well thought out. Agreements pass through objective selection and study of its advantages and disadvantages.

Chosen from a set of alternatives. The more options, solutions or alternatives, the better. Options provide greater chances of making sound decisions.

Does not hurt anyone. A good decision is fair to all concerned. An individual may subsume his individual preferences under the group, but it does not mean that he cannot express himself in the group.

Objective and not subjective in nature. People should base their decisions on truth and use, not on emotions or feelings towards a certain situation.

Based on facts. It should be based on previous experiences which have been verified and tested.

Based on people's needs and capacities. It should fit what the people need and aim to achieve, as well as the skills needed to carry out the decision.

Techniques of decision making
Opinion setting. People share their ideas about an issue, concern or problem and select the sound one as the decision.

Option setting. Alternative solutions are set supported by facts and data. Whichever is suitable to the situation becomes the decision.

Solution setting. Plans and agreements are set according to what the group wants to achieve.

Rationalizing action. Plans and actions are given meaning and logic.

Source: Upland Development Programme (1991)

The agreement is signed by the President, Cashier and executive members of the MC of the RMS or FPC on behalf of the village community and by the Forest Block Officer and RFO on behalf of the FD and finally countersigned by the DCF or DFO or SDO. The local NGO may also sign this agreement as a witness to the whole process.

The proceedings of the village meetings for reaching a consensus on the final draft of microplan and deliberations for drawing up the agree-

Box 23

Microplan-cum-action plan sheet for implementation

The action plan should be time-bound and must specify the resources and persons responsible for each activity.

A community plan of village ...... for the year......

Problem	Reason	Action	Responsible persons		Schedule											
			Leaders	Support	Apr.	May	Jun.	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
Water	Seasonal flow in streams, deep water table	Request FD for assistance in building a dam	FD (DFO)	RMS	x	x					x	x	x	x	x	
Fodder	Open grazing, fires, shrub growth.	(i) Stall feeding of cattle, fire control	(i) RMS	FD	x	x	x	x	x	x	x	x	x	x	x	x
		(ii) Planting of fodder species	(ii) FD	RMS			x	x	x							
Fuelwood	Poor forest growth, excessive soil erosion	(i) Plantations	(i) RMS	FD			x	x	x					x	x	
		(ii) Soil cons. measures	(ii) FD	RMS	x	x	x	x					x	x	x	
Village Road	Not maintained, no budget	Road repair, request *zila parishad* for funds	*Sarpanch*, RMS	FD/ *Zila Parishad*						x	x	x	x			

ment, etc., should be duly recorded and signed by the office bearers of RMC or FPC, and forestry staff present in such meetings.

Step 2. Estimate preparation and sanction

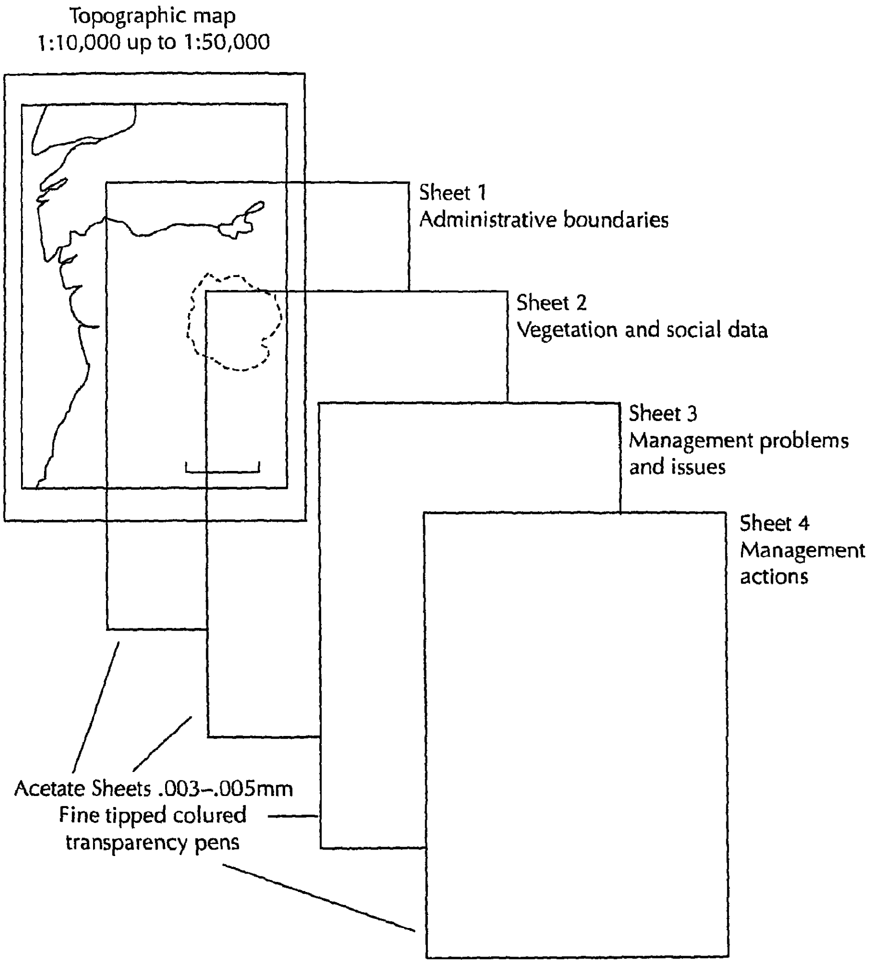
After signing of agreement and approval of microplan document by the DCF or DFO, the RMS or FPC will prepare an Action Plan (AP) to carry out the current year's activities outlined in the microplan. A copy of the annual AP is submitted by the RMS or FPC to the DCF through the RFO concerned. The RMS or FPC indicates the extent of internal funds mobilized by them and the financial assistance sought from the FD. The DCF then issues the sanctions of the AP and allocates funds to the RMS or FPC for timely implementation of different operations proposed under the AP. The RMS should try to tap all possible sources of funding such as District Rural Development Agency (DRDA), watershed management programme, *Panchayati Raj* grant, etc.

Step 3. Manual GIS and action plan for implementation of microplan

For easy understanding and convenience of use by the local community, the salient features and operations of the microplan are transformed into a set of manual Geographical Information System (GIS) sheets or maps comprising (i) base maps or toposheet of 1:15,000 scale, showing the boundaries of the RMS's forest area, (ii) present land-use pattern or resource use map of the area on a clear transparency or acetate sheet of .003 to .005 mm thickness, (iii) management or microplan map, on a similar transparency or acetate sheet, showing activities or operations proposed under the microplan with time schedule for each activity (Figures 14–16).

The base map or toposheet should be laminated to protect it from water and dirt and to prevent it from tearing easily. If the microplan map sheet is placed over the resource use map sheet, and then both the sheets placed on the base map (duly aligned), it provides a picture of the RMS's forest area, existing land-use and the activities proposed in different areas as per the microplan. In this way, the villagers can easily understand the operations to be carried out in different areas at different times and implement them accordingly without referring to the written microplan document (which can serve as more detailed reference). However, for further convenience of reference and timely implementation, the activities proposed in the microplan and the time schedule can be tabulated as a microplan-cum-action plan sheet as illustrated in Box 23.

The number of sheets used for manual GIS can vary from three to five depending upon the need and local conditions, as shown in Figure 14. The local field staff of FD assists and guides the community for timely implementation of various activities and operations outlined in the manual GIS microplan-cum-AP.


Topographic map
1:10,000 up to 1:50,000
Sheet 1
Administrative boundaries
Sheet 2
Vegetation and social data
Sheet 3
Management problems and issues
Sheet 4
Management actions
Acetate Sheets .003–.005mm
Fine tipped colured transparency pens

Benefits

-Low cost
-Easy updates
-Facilitates common understanding of field reality
-Provides a framework for ongoing planning
-Portable
-Fun to work with
-Convenient format for data collection

Figure 14 Manual geographic information system (GIS) mapping tools
Source: FAO (1995)

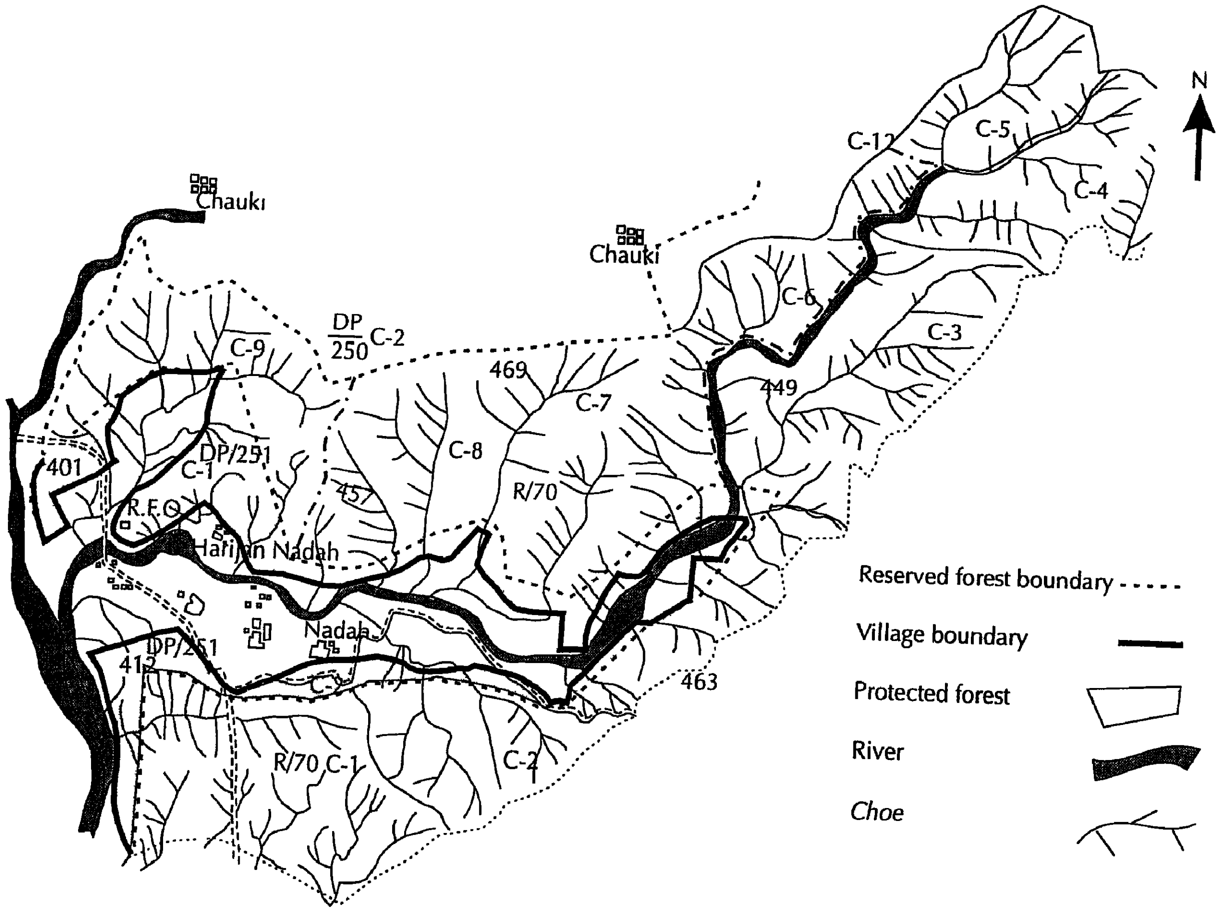


Figure 15 HRMS area map: Nada HRMS

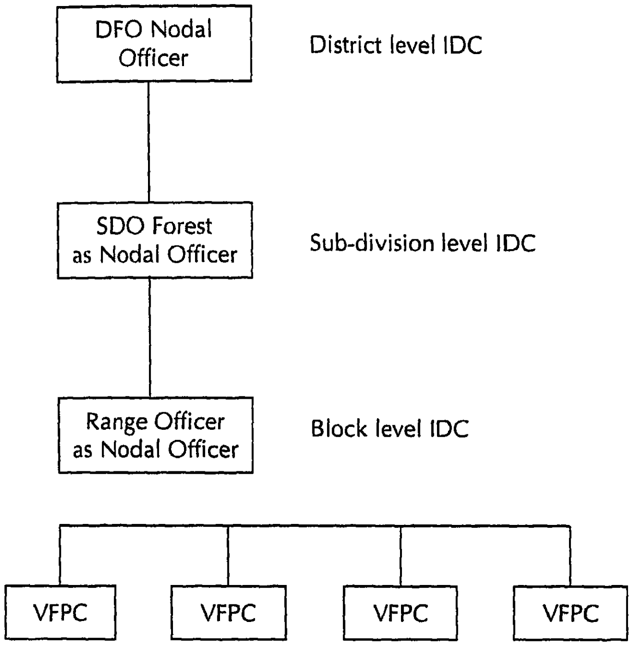


Figure 16 An overview of inter-departmental coordination system in Harda, Madhya Pradesh
Source: Bahuguna V K (1992)

Step 4. Monitoring and review

The JMU of the Division concerned will monitor implementation of the AP regularly in coordination with the local staff, NGO, and the village community. Keeping the baseline survey data in view, periodical assessment of regeneration or condition of vegetation, production or flow of benefits, and impact of the plan on socio-economics of the community is carried out by the JMU or NGO to ensure overall improvement of ecosystem and to devise suitable interventions for evolving progressive and sustainable JFM programme (Box 24). Continued follow-up and monitoring is required by field staff to ensure that the operations prescribed in the microplan are carried out properly. The community may seek further advice from time to time on particular activities, and maintain proper records of various operations, benefit sharing, expenses and income, etc.

Step 5. Revision and amendments

The microplan is intended to be a flexible document. Alterations can be made to the plan according to the requirements of the user group and the experience gained or lessons learnt during implementation of various activities. A lot of effort, thought and discussion has to go into the preparation of microplan. The usual tendency to make changes on

Box 24

Annual action plan monitoring sheet

Forest name: .... **User group name:** ....

Number or name of management blocks: ....

Block/compartment no.	**Year**
1. Operation Month	
2. Operation Month	
3. Operation Month	
4. Operation Month	

flimsy grounds should be checked at the outset and the set of prescriptions/activities proposed should be duly tried and tested in all earnestness for a sufficient period of at least four to five years before making any review for the likely amendment.

Minor revisions and time-schedule adjustments may be made according to the needs of the user group in consultation with the field staff. Any major changes should be approved by the DFO.

The modifications/amendments so decided should be duly indicated on the 'Microplan Sheet for Implementation' as well on the 'Manual GIS Sheet'.

Structure and format for microplan document

Microplan is a simple, easy-to-understand document prepared jointly by the community and the forestry staff to describe the operations and activities they intend to carry out in their area. Box 25 reflects the JFM support network's views regarding microplanning. Unlike the Management Plans (Working Plans) prepared by the FD, which are historical, social, ecological, silvicultural, and techno-economic analytical treatises for management of forests in a division, a microplan is intended to be a brief and much simpler document which reflects, in an easily un-

Box 25

Some views of the national JFM support network participants regarding microplanning

Involving local communities. Planning is deciding in advance what is to be done to attain a set of goals. In JFM the broad objective is to involve people in the management of national forests and link people to the benefits accruing from forests and their proper management. Since the unit chosen for JFM is usually a village and a forest patch surrounding it on which the village is dependent, the microplan should attempt to link the resource with specific identifiable groups of people.

There is a misconception in certain quarters that microplanning is a sophisticated exercise requiring a high degree of expertise. On the contrary, the microplan should be an outcome of a joint exercise between the local community and the forest department keeping in view the needs of the people as well as the capacity of the area and the technical feasibility. Participatory rural appraisal (PRA) methodologies can be quite effective in ensuring that the planning process is broad-based and truly reflects community goals. The plan should be easily understandable to field workers as well as to local people; thus, it is imperative that it uses the local dialect.

Integration with working plans. One should keep in mind that the microplan for a forest patch is also a part of a particular forest block, range and division, and thus, there is a need to dovetail the microplan with the working plan prescriptions. A special provision may be kept for NTFPs, which are generally ignored in working plans. In this way, continuity can be maintained among different microplans despite these being site-specific and for a particular time-frame.

The integration of village plans with working plans requires changes in the philosophy and content of the working plans. At the same time it is important to make realistic village plans within a given budget. These should not be just an aggregate of village demands for school, water, roads, etc., but should be practical, and capable of being accommodated within the state budgets. The plan should also attempt to integrate other government schemes for rural development, animal husbandry, soil conservation, etc., to optimize returns.

The preparation of a JFM microplan entails a survey of the area through PRA methods to assess the needs and expectations of people. This survey should take into account the number and type of cattle, the extent of dependency on forest products and the services from forests used by people.

On the basis of these needs the technical plan must be developed with the assistance of the FD staff. A management plan should be worked out detailing the responsibilities of the local community and the FD, taking important aspects such as protection into account. The plan should envisage inflows and outflows of funds and products, and provide for an equitable distribution.

The management issues are inseparably linked to objectives. The objectives of forest management need to be defined more precisely. Silvicultural practices and management options should then be geared to meet those objectives, and not the other way round.

Source: Society for Promotion of Wastelands Development (1992) derstandable language and format, the needs, aspirations and activities of a forest community for sustainable use of forest resources near its habitation. Therefore, instead of the standard format used for preparation of Working Plans, a microplan's format and contents are intended to be brief, explicit, illustrative (tabular statements, calendars, maps, etc.) and site-specific. The structure of a microplan may thus be based on the following main contents:

- brief description of area and land-use pattern
- demographics of the community
- community's dependence on forest resources and the related problems
- description of proposed activities with justification
- data sheet with estimated quantities and costs
- sketch maps, baseline data, Appendices, etc.
- implementation and monitoring systems

Based on these contents, a standard format as given in Appendix II is recommended for adoption in preparation of microplans. This format is only indicative and may be modified suitably to cater to the specific needs and conditions in a particular locality.

The microplan document should be written or translated to the local language so as to make it accessible and useful to the user community.

Outputs of microplanning

Outputs of the microplanning exercise will be of the following three broad categories.

Category 1. General working papers

- Transects, rating tables, calendars, sketches, charts, posters, etc., prepared during PRA exercises and community meetings/discussions.
- Various sketch maps drawn by the people during PRA exercises, village meetings, etc.

Category 2. Permanent records

- Range profile maps and accompanying data/reports.
- Baseline survey data, maps, village profile, etc.
- Bye-laws and registration certificate of the RMS or FPC.
- Boundary demarcation map of the RMS or FPC (duly signed).
- Agreement for JFM between the FD, and the RMS/FPC.
- Microplan document (including maps, estimates), duly ratified by the FD.

Category 3. Manual GIS-cum-AP for implementation of microplan

- Boundary demarcation map of the RMS or FPC on a laminated toposheet of 1:15 000 scale (Figure 9).
- Present land-use or resource map of the RMS of FPC's area on a clear plastic transparency or acetate sheet about .003 to .005 mm thick (Figure 10).
- Management or microplan map on a similar transparency sheet showing operations or activities proposed in different areas with time schedule (Figure 11).
- Microplan-cum-action plan sheet for implementation (Box 23).

One set each of the Category 2 and 3 documents should be kept in safe custody of the FD as well as the RMS or FPC concerned for their reference and record.

APPENDIX I

Village profile and resource data background sheet

1. **Village name** ***Panchayat*** **name Block name Tehsil District**

. . . .

2. **Forest beat Forest block Forest range Forest division Forest circle**

. . . .

3. **User group**
Name of community
No. of households
Population

A. Primary forest users

(i) . . . .

(ii) . . . .

(iii) . . . .

Total

B. Secondary forest users

(i) . . . .

(ii) . . . .

(iii) . . . .

Total

4. Social composition of primary community (By caste, tribe, religion, etc.)

S. No.	Social group	No. of households	Population
1.	....	....	....
2.	....	....	....
3.	....	....	....
4.	....	....	....
5.	....	....	....
6.	....	....	....
7.	....	....	....
8.	....	....	....
9.	....	....	....
10.	....	....	....

5. Economic stratification of primary community (by profession, trade, etc.)

S. No.	*Occupation*	*No. of households*	*No. of persons involved*	*No. of days employed per year*
1.	Farming	....	....	....
2.	Livestock			
	a) Dairying/milk ending	....	....	....
	b) Goat/sheep rearing	....	....	....
	c) Piggery/poultry	....	....	....
3.	Artisans			
	a) Computer	....	....	....
	b) Blacksmith	....	....	....
	c) Mechanic	....	....	....
	d) Weaver	....	....	....
	e) Others (specify)	....	....	....
4.	Government service			
	a) Forest Department	....	....	....
	b) Army/Police	....	....	....
	c) Education	....	....	....
	d) Revenue	....	....	....
	e) Others (specify)	....	....	....
5.	Private service/labour			
	a) Factory workers	....	....	....
	b) Shopkeeper	....	....	....
	c) Daily labour	....	....	....
	d) Others (specify)	....	....	....

6.	Transport			
	a) Bus/taxi	....	....	....
	b) Truck	....	....	....
	c) Tractor/trolley	....	....	....
	d) Cart	....	....	....
7.	Barber	....	....	....
8.	Washerman	....	....	....
9.	Priest	....	....	....
10.	Others (specify)	....	....	....

6. Employment pattern (Abstract of item 5)

S. No.	*Category of employment*	*Percentage of total employed*
1.	Farming	....
2.	Livestock	....
3.	Artisans	....
4.	Government service	....
5.	Private Service/Labour	....
6.	Transport	....
7.	Others	....

Employment as percentage of total population

7. Livestock population

Feeding system:	Buffaloes	Cows/bullocks	Sheep/goat	Camel	Others
a. Stall feeding	....	....	....	.....	......
b. Open grazing	....	....	....	.....	......

Total

8. No. of households and cattle migrating annually, indicating the routes, places, periods for migration and reason thereof.

9. Details of village land (in ha)

	Category of land	*Irrigated*	*Unirrigated*	*Total*
1.	Private cultivated land	....	....	....
2.	Private uncultivated land	....	....	....

3.	Village common land	....	....	....
4.	Other land (specify)	....	....	....
	Total land of the village	....	....	....

10. Land Holdings (in ha)

S. No.	*Category*	*Average land Holding*	*No. of households*	*Population*
1.	Large farmer	Over 4 ha	....	....
2.	Small farmer	2 to 4 ha	....	....
3.	Marginal farmer	< 2 ha	....	....
4.	Landless	No land	....	....
	Total			

11. Cropping pattern

	1	2	3	4	5	6
A. Rabi crops	Wheat	Barley	Gram	Mustard	Berseem	
Mean production/ha						
(i) Unirrigated	.....	.....	.....	.....	.....	.....
(ii) Irrigated	.....	.....	.....	.....	.....	.....
B. Kharif crops	Maize	Paddy	Bajra	Jowar		
Mean production/ha						
(i) Unirrigated	.....	.....	.....	.....	.....	.....
(ii) Irrigated	.....	.....	.....	.....	.....	.....
Total						

12. Sources of fodder

(i) Forest land
- (a) Grasses - ....%
- (b) Tree leaves - ....%

(ii) Common land - ....%

(iii) Agricultural land - ....%

(iv) Market - ....%

(v) Others (Specify) - ....%

13. Sources of fuel

(i) Forest land - ....%

(ii) Common land - ....%

(iii) Farm land
- (a) Farm trees - ....%
- (b) Agricultural waste - ....%

(iv) Cow dung - ....%

(v) Biogas/gasifiers - ....%

(vi) Solar cookers - ....%
(vii) Kerosene - ....%
(viii) Others (specify) - ....%

14. Forest area traditionally used by the community

Compt./Sub-Compt. No.	*Legal status*	*Area in ha*	*Other communities sharing this area*
....	....	....	....
....	....	....	....
....	....	....	....
....	....	....	....
Total			

15. Forest Products traditionally used by community (in order of importance)

(1)	(2)	(3)	(4)	(5)
....	....	....	....	....
(6)	(7)	(8)	(9)	(10)
....	....	....	....	....

16. Traditional users of forest resources

User group	*Percentage fulfillment of needs for*					*Mean % dependence*	*No. of house holds*
	Fodder	*Fuel*	*Timber*	*Water*	*NTFPs*		
(i)							
(ii)							
(iii)							

17. Fodder grass lease of forest area

(i) Does the community hold a fodder grass lease - Yes/No
(ii) Compartment numbers leased and their area in ha -
(iii) Since when they have been getting fodder lease - Year ....
(iv) How much they paid last year - Rs ....
(v) How much did they charge for dati/grass permit - Rs ....
(vi) Which other villages share grass lease -

18. Bhabbar grass lease of forest area

(i) Compartment no. (nearest to this community) and their area in ha.

(ii) Who currently holds the lease?: society/contractor/paper mill -
(iii) Auction price or lease money realized last year - Rs ....
(iv) Estimated total production last year (199...) - Qtls.
(v) How does the community utilize bhabbar lease
  a. Convert into ropes - %
  b. Domestic use - %
  c. Subcontract it - %
  d. Sell in open market - %
  e. Sell to paper mill - %
  f. Use as green fodder - %

(vi) Name other communities, if any, who share the *bhabbar* lease.

19. Water-harvesting dams	**Dam No.1**	**Dam No.2**	**Dam No.1**
(i) No. of dams and their names			
(ii) Year of construction			
(iii) Catchment area in ha			
(iv) Storage capacity in mha			
(v) Length/height of dam (m)			
(vi) Command area:			
a. Total potential			
b. Irrigated presently			
c. No. of irrigations/year			
(vii) Length of pipeline			
(viii) Condition of pipeline (open, chocked, broken etc.)			
(ix) Condition of spillway			
(x) Condition of embankment			
(xi) Works needed for repair, etc.			
(xii) Other Sources of irrigation (specify)			

20. Civic facilities in the community

S. No.	*Type of facility*	*Location*	*Distance from village (km)*
1.	Primary School	....	....
2.	High School	....	....
3.	Bank	....	....
4.	Post Office	....	....
5.	Primary health centre	....	....

6.	Veterinary hospital	....	....
7.	Bus service	....	....
8.	Others (specify)	....	....

21. Details of water resources

A. Irrigation water facilities
  (i) Canal/Kulhs
  (ii) Open wells
  (iii) Bore wells
  (iv) Engine sets

B. Drinking water facilities

	Numbers	*Depth*	*Area*	*Length, etc.*
1. Hand pumps	....	......	.....	....
2. Open wells	....	......	.....	....
3. Ponds, tanks	....	......	.....	....
4. River/spring	....	......	.....	....
5. Public health	....	......	.....	....

22. Village institutions

1. *Panchayat* (give location, name of villages covered)
2. Cooperative Bank
3. Cooperative Society
4. *Yuvak Mandal* (Youth Group)
5. *Mahila Mandal* (Women Group)
6. *Bhajan Mandal*
7. Any voluntary agency/NGO
8. HRMS/FPC, etc.
9. Others (specify)

23. Problems and needs of the community vis-s-vis development and management of forest resources

24. Development schemes operating in the Area

	Name of scheme	*Department / agency involved*	*Main activity*
(i)			
(ii)			
(iii)			
(iv)			
(v)			
(vi)			

25. Villagers preference of species for planting (in order of preference)

a. Tree species

b. Shrubs

c. Grasses

26. Any other remarks

APPENDIX II

Format for microplan

1. **Introduction**

2. **Description of area and resources**
   - 2.1 Situation
   - 2.2 Configuration
   - 2.3 Extent of area and land use pattern
   - 2.4 Forest area
     - 2.4.1 Classification, extent, legal status
     - 2.4.2 Past history of management (in brief), rights and concessions
     - 2.4.3 Composition and condition of vegetation
     - 2.4.4 Plantations
     - 2.4.5 Current usage pattern
   - 2.5 Water resources

3. **Social structure of the community**
   - 3.1 Demographic data (give brief summary of Appendix I)
   - 3.2 Social structure
   - 3.3 Economic stratification and employment
   - 3.4 Agriculture and animal husbandry
   - 3.5 Communication and local institutions

4. **Dependence on resources and analysis of problems**
   - 4.1 Assessment of needs of people
   - 4.2 Current levels of production and usage pattern
     - 4.2.1 Fodder and grasses
     - 4.2.2 Fuelwood
     - 4.2.3 Timber
     - 4.2.4 Water
     - 4.2.5 Other products
   - 4.3 Gaps in demand and supply

- 4.4 Analysis of problems and constraints for sustainable production or usage

5. Objects of future management

- 5.1 Development options, opportunities, and strategies
- 5.2 General objects of management
- 5.3 Priority management options

6. Description of proposed activities

- 6.1 Methods of treatment, and maintenance
  - 6.1.1 Protection of resources
  - 6.1.2 Soil and water conservation
  - 6.1.3 Water harvesting dams
  - 6.1.4 Plantations
    - (a) Trees and bamboos
    - (b) Grasses and fodder
    - (c) NTFPs
- 6.2 Time schedule and area to be treated
- 6.3 Duties and responsibilities of community and FD for various operations, funding and monitoring, etc.
- 6.4 Cost estimates

7. Control and records

- 7.1 Bye-laws, constitution, and registration certificate of RMS/FPC
- 7.2 Agreement between the RMS/FPC and the Forest Department
- 7.3 Membership register of the RMS/FPC
- 7.4 Register for minutes of meetings of the RMS/FPC
- 7.5 Water use register
- 7.6 Fodder and fuel use register
- 7.7 Register for use and sharing of other benefits
- 7.8 Cash book, receipt books and bank account records
- 7.9 Audit and annual reports of the RMS/FPC

8. Appendices, maps and baseline survey data

9. Manual GIS sheets/maps

10. Microplan-cum-action plan sheets for implementation

APPENDIX III

Range profile proforma – I (As used in West Bengal)

Demographic information

Division .... Range/Beat ....

Name of FPC

Beat

Total members

S C members

S T members

Women members

Big/medium farmers (> 2 ha)

Small/marginal farmers (< 2 ha)

Landless families

Total cattle population

Source: Roy S B, Chatterjee M (1993)

APPENDIX IV

Range Profile - Proforma – II (As used in West Bengal)

Resource Data Information

Division: .... Range/Beat: ....

1. Name of FPC
2. Beat
3. Forest Boundaries not demarcated (km)

4. Sal Forest
    i) Needs Coppicing (ha) - < 3 years
    ii) Needs MS Cutting (ha) - 3-6 years.
    iii) Mature Crop (ha) - 10 years.
    iv) Needs Enrichment Plantation (ha)

5. i) Young plantation - 1 to 5 years (ha)
    ii) Older Plantation - > 5 years (ha)

6. Degraded Plantation needs Coppicing (ha)

7. Blank/Scrub Forests (ha)

8. Vested Waste Land for Block Plantation (ha)

9. Land for Strip Plantation (ha)

10. Land for Farm Forestry (ha)

11. Sal leaf area (ha)

12. Scope for Earthen Dam (no.)

13. Scope for Jorebandh (no.)

14. Needs Road work (km)

Source: Roy S B, Chatterjee M (1993)

APPENDIX V

Range Profile Proforma – III (As used in West Bengal)

Need Assessment of Forest Communities

Division: .... Range/Beat: ....

1. Name of FPC
2. Beat
3. Major source of fuel *1
4. Major source of fodder *1
5. Demand for fuelwood plantation *2
6. Demand for timber plantation *2
7. Demand for tassar host plantation *2
8. Demand for bamboo plantation *2
9. Demand for other spp. (specify two)
   (Fooder, fruit, etc.)
10. Demand for farm forestry spp.
    - QGS (No.)
    - Fruits (No.)
    - Tassar host (No.)
    - Bamboo (No.)
    - Timber (No.)
11. Demand for earthen dam *2

12. Demand for Jorebandh *2

13. Need for road improvement *2

14. Need for drinking well *2

15. No. of unemployed mandays

*1 - If Forest = + *2 - If Yes = ‘+’
If Other Source = - If No = ‘-’

Source: Roy S B, Chatterjee M (1993)

APPENDIX VI

Range Profile Proforma - IV (As used in West Bengal)

Range/Beat Level Microplan

Division: .... Range/Beat: ....

1. Name of FPC
2. Beat
3. Year

4. Flow chart	Physical	Financial (Rs)	Physical	Financial (Rs)	Physical	Financial (Rs)	Physical	Financial (Rs)	Physical	Financial (Rs)	Physical	Financial (Rs)
5. Survey/demarcation												
6. Coppicing of sal												
7. MS cutting of sal coppice												
8. Final harvest of sal coppice												
9. Harvest of mature plantation												

10 Adv soil works
  Fuelwood + Fodder + Timber + etc.
    Tassarhost
    Bamboo, etc
    Any other
    Enrichment
    Vested land block pltn
    Strip Pltn
11 Bal Creation of Pltn
  Fuelwood + Fodder + Timber etc
    Tassar host
    Bamboo, etc
    Any other
    Enrichment
    Vested land block pltn.
    Strip pltn
12 1st year maintenance of pltn.
13 2nd year maintenance of pltn.
14 i) Adv nursery work—farm forestry
  ii) Bal nursery work—farm forestry
15 Agro-forestry/Silvipasture
16 Pruning of kend
17 Construction of earthen dam
18. Construction of Jorebandh
19. Soil conservation structural works
20 Road construction/improvement
21 Digging well for drinking water (Part work)
22 – do – (Balance work)

Source Roy S B, Chatterjee M (1993)

APPENDIX VII

Proforma for FPC Level Microplan (As used in West Bengal)

1 Name of FPC

2. Beat

3 Year

											Total	
4.	Flow Chart	Physical	Financial (Rs.)	Physical	Financial (Rs.)	Physical	Financial (Rs.)	Physical	Financial (Rs.)	Physical	Financial (Rs.)	Physical	Financial (Rs.)
5.	Survey/Demarcation												
6.	Coppicing of sal												
7	M.S. cutting of sal coppice												
8	Final harvest of sal coppice												
9	Harvest of mature Plantation												
10	Adv Soil Works												
	Fuelwood + Fodder + Timber + etc												
	Tassar host												
	Bamboo etc												
	Any other												

Enrichment
Vested Land Block Pltn.
Strip Pltn
11 Bal Creation of Pltn..
Fuelwood + Fodder + Timber + etc
Tassar host
Bamboo etc.
Any other
Enrichment
Vested land Block Pltn.
Trip Pltn
12. Ist year maintenance of pltn.
13. 2nd year maintenance of pltn
14 i) Adv nursery work-Farm Forestry
ii) Bal nursery work-Farm Forestry
15 Agro-forestry/Silvipasture
16. Pruning of kend
17 Construction of earthern dam
18. Construction of Jorebandh
19. Soil conservation Structural works
20 Road Construction/Improvement
21 Digging well for drinking water (Part work)
22 – do – (Balance work)

Source· Roy S B, Chatterjee M (1993)

APPENDIX VIII

Summary of microplan of village Khod, Aravalli Hills

1. **Name of village:**

Tehsil	Dist.	Division	Sub-division
Nuh	Gurgaon	Sohna	Raipur Range

2. **Location**: Approximately 8 km from Sohna Town on Sohna to Rojka Meo Road

3. **Land resources:**

Cultivated	*Panchayat* land	Total (ha)
64 ha	150 ha	214 ha

4. **Climate, soil, etc.**

(i)	Rainfall	652 mm/year (Range: 196–1133mm)
(ii)	Water table	30–70 m
(iii)	Type of Rocks	Quartzite and sandstone
(iv)	Soil Type	Sandy loam to clay loam, shallow depth with boulders and pebbles

5. **Natural vegetation**

(i)	Trees	*Anogeissus pendula, Acacia leucophloea, Acacia senegal, Phoenix dactylifera* (Date Palm)
(ii)	Shrubs	–
(iii)	Grasses	*Aristida* spp., *Cenchrus ciliaris, Cenchrus biflorus, Chrysopogon fulvus, Heterpogon controtus*

6. **Demographic Data**

(i) Population

Male	Female	Children	Total
283	157	229	669

(ii) No. of households = 60, Muslims = 48, Others = 12

(iii) Livestock	Buffalo	Bullock	Cow	Goat/ Sheep	Camel
a) Stall-fed	200		10	–	–
b) Open grazing	50	–	60	235	–
c) Total	250	10	60	235	–

7. **Fuel resources** (Percentage use)

Common land	**Agri. waste**	**Cowdung**	**Other**
8	60	30	2

8. **Fodder sources** (Percentage use)

Common land	**Agri. land**	**Others/market**
20	77*	3

* Includes crop residues and lopping from trees

9. **Annual requirement of fuel and fodder (quintals)**

Fuel - 4884 Fodder - 23000

Legal position of common land

10. **Section 38 of IFA/Section 4 of LPA/Section 5 of LPA Open Total**

Section 38 of IFA	**Section 4 of LPA**	**Section 5 of LPA**	**Open**	**Total**
Nil	Nil	Nil	150	150

11. **Common land made available for rehabilitation (ha)**

Model-1	Model-II	Model-III	Total (ha)
49	101	Nil	150

12. **Vegetative rehabilitation plan**

Year	Model-I	Model-II	Total (ha)
1991/92	-	37	37
1992/93	-	34	34
1993/94	39	-	39
1994/95	-	10	10
1995/96	-	30	30
Total	39	111	150

13. **Villagers' preference for species:**

Fodder and firewood trees : *Holoptelia integrifolia* (Papri), *Prosopis juliflora* (Mesquite), *Acacia leucophloea* (Ronj), *Albizzia lebbeck* (Siras), *Acacia* *sengal* (Khairi), *Azadirachta indica* (Neem), *Anogeissus pendula* (Dhok), *Ailanthus excelsa* (Ulloo neem), *Butea mononsperma* (Dhak).

Fruit trees : *Ziziphus mauritiana* (Ber).
Shrubs/Grasses/Legumes : *Cenchrus ciliaris* (Anjan)

14. **Resolution** was passed by *Panchayat* on **1-6-91** for handing over **150 ha** of common land to the Aravalli Project.

15. **Village Forest Committee** was formed in June 1991. The constitution of the present VFC is as follows.

President (*Sarpanch*) :
Secretary (SDO) :
Cashier :
Members 1.
2.
3.
4.
5.
6.
7.
8.
9.

16. **Agreement** between HFD and *Panchayat* signed on 10.6.93.

17. **Microplan** was accepted by the Village Forest Committee in the General Body meeting of the village council held on the same day.

Source: Srivastava J P L, Kaul R N (1994)

APPENDIX IX

A sample agreement between forest department and village community for participatory management of village common land in Aravalli Hills

AGREEMENT

Resolution to be passed by the *Panchayat*

This Resolution made this 10th day of June 1993 (one thousand nine hundred and ninety three) by the *Panchayat* of Khod (hereinafter called the 'Beneficiary') witnesseth as follows:

1. That the Beneficiary is authorized to execute this resolution and execute any works under this resolution to be done by the *Panchayat*.

2. That the beneficiary agrees to handover land in the annexed schedule to the Divisional Forest Officer Khod (hereinafter referred to as the Forest Officer) for raising plantations of suitable species, with intimation to the concerned Block Development and *Panchayat* Officer, within 15 days.

3. The *Panchayat* shall appoint a sub-committee, called the Village Forest Committee (hereinafter called the VFC) for forestry work on the common lands, vested in the *Panchayat*, under the Punjab Common Lands Act, 1961.

    (1) The VFC shall be constituted of 9 to 13 members, which will include the *Sarpanch* as head of the VFC, the Forest Ranger/ SDO or any person duly designated by the Divisional Forest Officer as Secretary, the Gram Sachiv (hereinafter referred to as the BDO), at least 3 women residing in the village and who

cultivate or use the common lands for fuel or fodder resources, and the co-opted members at least one of whom belong to the schedules caste or tribes category. One of these members shall be designated as the Forest Protection Guard, and another as Cashier of the VFC. The VFC shall be an Executive Committee of the *Panchayat*. All male and female members, eligible to be members of the *Panchayat* shall be deemed to be members of the general council to which the VFC will report.

(2) The VFC shall be authorized to execute an indenture on behalf of the *Panchayat* and execute any work under this indenture to be done by the *Panchayat*.

(3) After concurrence of the concerned Block Development and Panchayat Officer, the VFC shall agree to enter into an agreement with the Divisional Forest Officer (hereinafter referred to as the DFO) for raising plantations of suitable species and other vegetation necessary for the ecological rehabilitation and maintenance of the common lands. The cost of all operations related to raising of the plantations shall be borne by the DFO (Haryana Forest Department).

4. The Beneficiary affirms that the *Panchayat* has the absolute right and title to the land described in the appended schedule.

5. That the Forest Officer will determine the species in consultation with the beneficiary and the VFC and raise the plantations at his own cost.

6. That the Forest Officer will be responsible for establishment and maintenance of the plantations for six years including the year of formation and will intimate the Beneficiary that his responsibility as laid down in clause seven of this resolution shall commence.

7. That the Beneficiary shall:
   a) Protect the plantations
   b) Maintain and manage the plantations after six years, or as decided by the Village Forest Committee.
   c) Refrain from using the land under plantations for any other purpose including mining unless permitted by the Forest Officer.
   d) Accept and implement all directions of the Forest Officer regarding protection, maintenance, management and harvesting of plantations.

8. That the Forest Officer or his Assistant or any person duly authorized by the Forest Officer in this respect, shall be entitled to enter upon the said land for purposes of raising, maintaining, managing and inspection of plantations, and for any other purpose considered relevant to the plantations by the Forest Officer.

9. The Forest Officer will provide training to the villagers to be nominated by the VFC in the techniques of raising and maintaining nurseries and plantations.

10. The villagers will be permitted:
    (a) To remove fruit, flowers, collect dead wood, fodder leaf, and cut and carry grass free of charge. Provided the Forest Officer may, at his discretion and after discussion the VFC, prohibit some or all these privileges for the establishment and improvement for the plantations.

    (b) To collect, at each thinning, and final fellings at such rate and such price as may be determined by the VFC, fuelwood, poles and small timber subject to availability, provided, the privileges mentioned under sub-clause a & b shall be exercised in accordance with a scheme for distribution and/or sale of the forest produce, arrived at on the recommendation of the VFC with the assistance of the Forest Officer.

11. That subject to any directions issued by the Forest Officer for management of plantation, the Beneficiary will be entitled to harvest the tree crop at the rotation age in accordance with the management plan jointly prepared by HFD and VFC at the time of handing over the plantation. The Beneficiary, VFC, shall be entitled to sell such produce after assessment of its value by the HFD, preferably for bonafide, local and domestic consumption, provided that 30% is set aside for reinvestment in planting or forestry work on the said common lands.

12. That the Forest Officer shall continue to issue directions and render technical advice and assistance to the Beneficiary regarding maintenance, management, and protection of plantation throughout the rotation and such directions shall be binding on the Beneficiary.

13. That if the Beneficiary fails to carry out any of the directions issued by the Forest Officer under this resolution or any of its obligation which the Beneficiary is bound to discharge, the Forest Officer shall carry out at his discretion any or all the works regarding protection, maintenance and management of plantations at the cost of VFC, provided a notice of 15 days is issued to the Beneficiary to the effect.

14. That all tools, plants, stores, machinery and materials used on creation, maintenance, protection, and management of plantations shall be property of the government.

15. That the HFD does not hold itself responsible for the success of plantations nor for any monetary return from the said plantations and will not be liable to any damage or loss occurring to the Beneficiary as a result of creation of plantations on the said land or on account of any action of the Forest Officer.

16. All disputes and differences arising or in any way touching or concerning this resolution whatsoever shall be referred to the sole arbitration of Forest Officer, Aravalli Project. The award of such arbitrator shall be final and binding on the parties to this resolution. The beneficiary will have no objection to such appointment.

17. That it is agreed that the stamp will, if any, on this resolution shall be borne by the Governor.

18. In witness whereof, the parties to this agreement have here-unto set and subscribed their hand seal on the dates hereinafter mentioned respectively.

Signed, sealed, and delivered by the said parties on the 10th day of June, 1993 (One Thousand Nine Hundred and Ninety Three).

Sd/-
Sarpanch & Chairman
Village Forest Committee
Khod

Witness:

1.____________________________

2.____________________________

Signed, sealed and delivered by the __________________________ on this ____________________________ day of ___________ 199______ (One thousand nine hundred and ______________________________) on behalf of the Governor of Haryana and acting under this authority.

Sd/-
Divisional Forest Officer
Aravalli Project Sohna (Haryana)

Schedule of land

Name of the *Panchayat*	Mauza	Tehsil	District	Khasra Nos.	Area
1	2	3	4	5	6
Khod	Khod	Nuh	Gurgaon (Haryana)	377,104,53, 156,54,34,55, 352,332,57,311, 182,58,150, 140,307,228, 127,60,54,57,42	150

APPENDIX X

PRA Exercise for Microplanning in Village Mohrali, Maharashtra State

Background of the Village and the People

Moharli village is situated about 25 kilometres from Chandrapur, on the Chandrapur–Taroba road. Perhaps this village was established during the first-half of the nineteenth century by Malguars for constructing a village tank. Such a tank was constructed in this village in 1830, over an area of 146 ha. Two temples were also established around the same tank out of which one is Maruti temple, and the other the Goddess Mohrali temple. Subsequently, the villagers must have worked as labourers for the forest department. It appears that forestry practices were fully in operation in this area, as could be deduced from a forest rest house near the village, which dates back to 1908. Initially, the community was dependent mainly on agriculture and on the surrounding forests. Originally, about 335 hectares of agricultural land was available in the village but in 1982, private holdings were acquired as submergence area of Irai dam. After this acquisition the agricultural land of the village shrunk to 40 ha (100 acres). The land holdings are small and widely dispersed, and agriculture is no longer the mainstay of the village economy. The village has six wells, two of which were constructed by the Forest Department. Unlike the land resources, water is found in plenty in the village. But there is limited scope for increasing agricultural production by utilization of this resource for irrigation.

Mohrali has a population of 1249, which includes tribals as well as non-tribals. About 50% of the village population is of schedule class and schedule tribe (SC/ST). Most houses in the village are mud-thatched, though some Mangalore-tiled houses are also coming up. The layout of the houses in the village is not systematic but the premises are largely clean. The village has a primary school which is up to seventh standard. Prior to the mid-seventies, the school was housed in a building which was used as a police station during the British period. The first school building was constructed in 1977/78. Subsequently two rooms were added in 1987/88 and 1991/92. Later, extension was carried out under the Central Government schemes NREP and JRY. About 250 students are currently enrolled in this school. There are seven posts of teachers, of which six are occupied. Three teachers live in the village while the others commute from Chandrapur. Discussions with some of the children indicated that quite a few of them had attended school up to second and third standard. It appears that the parents are compelled to withdraw their wards from the school as they cannot afford the cost of books and school uniforms.

A sub-post office exists in the village. The postmaster receives a monthly honorarium of Rs 485. A sub-health centre was established in 1976/77 which was run by a malaria worker and a nurse. The Primary Health Centre is about 20 km from the village. There also exists an old forest dispensary in the village which has a full-time doctor and some support staff. A veterinary hospital is currently run in the *gram panchayat* Office. Although a building was sanctioned in 1988 for the veterinary hospital, it is yet to come up. The nearest police station (out-post) for the village is at Durgapur.

The village *panchayat* also undertook some development work in the past. Two roads were constructed in 1989/90 under the Jawahar Rozgar Yojana. Water channels were also constructed in the village during the same year under this scheme. The village was electrified in 1988 and 45 electric poles and 23 fluorescent tubes have been provided in the village which are maintained by the *gram panchayat*. Twenty-five of the 452 households have installed electricity connections.

The village is active in family welfare activities and 300 couples have been sterilized so far. The villagers bagged a prize of Rs 33 000 for their exemplary work in the family welfare programme. The *Gram Panchayat* collects around Rs 11 000 mainly in the form of house and electricity.

The village has a population of 1249, of which about 900 are in need of employment. However, the present scope of employment, which comes mainly from the activities of the Forest Department in the adjoining forest areas and agricultural sector, is totally inadequate. It was revealed that on an average, one person gets employment for only four to five days in a month. Provision of additional employment opportunities to the villagers in the nearby areas is an immediate necessity. Collection of information on the seasonal employment calendar revels that the agricultural sector provides employment to about 80 persons, from June to October, in paddy cultivation. Collection of *tendu* leaves gives employment to women and children during the months of May and June, whereas mohua flowers are collected in March. Mohua fruits, which are collected from May to July, are available once in four years.

Household activities, like thatching of roof etc., are carried out throughout the year and mainly women are engaged in this activity.

Fencing of agricultural fields also provides marginal employment to men and women in the month of June and July. It is observed that mainly women are engaged in the activities of MFP collection, and also in the collection of firewood from the forests for domestic use. About 10 to 15 persons are employed in the forest nursery at Moharli. Besides these, some men are employed as plantation *chowkidars* in the nearby plantation areas. Forest plantations also provide employment, mainly during the rains, to some able-bodied persons.

Forest Resources

Village Moharli is endowed with extensive forests tracts and has a continuous forest area adjacent to it. Most of such forest areas are notified as Reserved Forests (RF). Of late, it has been included in the Andheri Sanctuary. Besides the RF, 310 ha of Protected Forests (PF) and about 25 ha of Revenue Forests exist near the village. The PF is under the administrative control of the Forest Department, whereas the Revenue Forests are under the charge of the Land Revenue Department. Both PF and RF are reported to be ex-proprietary forests, which were acquired by the state government in the late fifties.

The RFs were managed by the Forest Department in the past under approved Working Plans. The operations included improvement of growing stock through different silvicultural prescriptions, planting of teak and other species, thinning, and harvesting of timber, poles and firewood. Besides, NTFP were being collected by the local communities for their own use and also for commercial purposes (under a prescribed system of disposal). The PF are expected, primarily, to cater to the local needs of fuel, poles, fencing material, timber, and livestock feed.

Important species which occur in the forests around Moharli comprise teak (*Tectona grandis*), tiwas (*Ougenia oogenesis*), mohua (*Madhuca indica*), bija (*Pterocarpus marsupium*), ain (*Terminalia tomentosa*), tendu (*Diospyros melanoxylon*), bamboo (*Dendrocalamus strictus*), shisham (*Dalbergia latifolia*), dhawda (*Anogeissus latifolia*), etc. Bamboo is preponderant with thick undergrowth of regeneration. The forest is infested with kukur ranji, a climber.

Dependence of the local people on the adjoining forests is mainly for grazing and *nistar* rights (needs of the village community for firewood, timber for housing, bamboo for housing and fencing, lops/tops, which are recognized by the Government and are duly recorded), green bamboo for making various articles. The villagers, especially women and children, collect NTFP, particularly *tendu* leaves and *mohua* flowers and seeds, as seasonal activity. During the field visit, it was observed that the local people perceive forestry operations as important employment avenues. Wage earning through unskilled personal/family labour is becoming increasingly important for the local people in view of the fact that many of the households have small land holdings due to submergence of their fields under the Irai Dam which has been constructed to supply water to a super thermal plant about 15 km away.

About 50 *Burud* families (a community engaged in bamboo craft) and women are relatively more dependent on forests. Burudes depend almost totally on the sale of bamboo articles for their sustenance. The raw material required by them is green bamboo. Women, especially the ones with limited physical endurance, depend on forests for collection of NTFP (to earn wages), fuelwood, and occasionally, for fodder. The Forest Department has opened a retail depot in the village for the distribution of both green and dry bamboo.

During the field visit, the villagers explained that their access to the nearby RF is being curtailed because of extension or creation of Andheri Wildlife Sanctuary. The statutory requirements of the Wildlife (Protection) Act 1972, have led to the imposition of certain restrictions on the sanctuary in respect of access as well as harvesting of forest produce. However, these restrictions are not imposed on PF. It would, therefore, be possible to enlist the participation of the local community in the development and protection of the nearby PF on a *quid pro quo* basis. The area of such forest is 310 ha. This forest has a cover of 50% to 60%. As such, the PF cannot be treated as degraded forests, and hence, would not fall within the purview of the Maharashtra Government's Resolution on Joint Forest Protection.

During the field exercise, the village community had shown its preference for certain NTFP species. Likewise, they had expressed preference for species useful for agricultural implements, fencing, household needs and fodder needs. During the PRA exercise, the villagers prioritized various development activities in the following order.

1. Establishment of a cooperative society of Burud craftsmen and supply of green bamboo to them.

2. Supply of seed for pisciculture to the existing society of fishermen.

3. Desiltation of the village tank.

4. Tree planting with emphasis on mohua and gum-yielding species.

5. Organizing cottage industry of making incense sticks through *mahila mandal*.

6. Provision of a tube-well at a known water source.

Source: Roy S B, Chatterjee (1993)

REFERENCES

Bahuguna, V K. 1992. *Collective Resource Management—An Experience in Harda Forest Division*. Bhopal: Regional Centre for Wasteland Development, IIFM. pp. 43.

Bardhan Roy B K. 1995. *Arabarai Experience—A model for Forest Management with People's Participation*. West Bengal: Forest Department. pp. 32.

Branney P, Dev O P. 1994. *Guidelines for preparing working plans for Community Forests in Nepal*. Kathmandu: Nepal – UK Community Forestry Project. pp. 29.

Chambers R. 1992. *Rural Appraisal: Rapid, Relaxed and Participatory*. UK: Institute of Development Studies.

Crum T F. 1987. *The Magic of Conflict*. Aiki Works Inc., Aspen Co.

FAO. 1995. *Participatory Monitoring and Evaluation*. Handbook for Training Field workers. Bangkok: Regional Office for Asia and the Pacific, FAO. pp. 51.

Gaur K K. 1995. A status report on Joint forest Management in Madhya Pradesh. Funded by University of Edinburgh. pp. 67.

Mascarenhas J, et al. 1991. *Participatory Rural Appraisal*. Proc. of Bangalore PRA Trainees Workshop, 1991. PRA Notes No. 13. London: International Institute for Environment and Development. pp. 143.

Pathan R S, Arul N J, Poffenberger M. 1991. Forest Protection Committees in Gujarat—Joint Management Initiative. Sustainable Forest Management Working Paper No. 7. New Delhi: Ford Foundation. pp. 26.

Poffenberger M, McGean B. 1993. *Community Allies: Forest Co-Management in Thailand*. Res. Network Report No. 2, August 1993. California: Centre for Southeast Asia Studies. pp. 62.

Roy S B, Chatterjee M. 1993. *Concept to commissioning—Guidelines for Participatory Forest Management Programme Implementation*. Calcutta: IBRAD. pp. 37.

Roy S B, Chatterjee M. 1993. *Training Manual for Participatory Forest Management Orientation for Forest Officials*. Calcutta: IBRAD. pp. 70.

SPWD. 1992. Field Methods Manual. Vol I. *Diagnostic Tools for Supporting Joint Forest Management Systems*. New Delhi: Society for Promotion of Wastelands Development and Indian Institute of Sciences. pp. 102.

SPWD. 1992. Field Methods Manual. Vol. II. *Participatory Rural Appraisal Methods in South Gujarat*. New Delhi: Society for Promotion of Wastelands Development and Ford Foundation. pp. 79.

SPWD. 1992. *Joint Forest Management: Concepts and Opportunities*. Proceedings of the National Workshop, 1992. New Delhi: Society for Promotion of Wastelands Development. pp. 78.

Srivastava J P L, Kaul R N. 1994. *Joint Forest Management of Common Lands: The Aravalli Experience*. Haryana: Haryana Forest Dept. pp 103.

TERI. 1995. *Community Participation in Van Panchayats of Kumaon Region of Uttar Pradesh*. Report submitted to ODA. New Delhi: TERI. pp. 113.

Theis J, Grady H M. 1991. *Participatory Rapid Appraisal for Community Development - A Training Manual based on Experiences in the Middle East and North Africa*. London: International Institute for Environment and Development. pp. 150.

Upland Development Programme. 1994. *Participatory Planning Hand Book for People Oriented Forestry*. Philippines: Upland Development Programme. pp. 112.

Upland Development Program. 1991. *Handbook on Community Training Programs for Participatory ISF*. Philippines: Upland Development Programme. pp. 187.

VIKSAT. 1995. *Footprints in Forest Protection*. Ahmedabad: VIKSAT. pp. 56.

FURTHER READING

Anonymous. 1994. Participatory Forest Working Plans in Orissa—A Pilot Study on Improvements in Procedures. Unpublished.

Asia Forest Network. 1995. *Transition in Forest Management: Shifting Community Forestry from Project to Process.* Res. Report No. 6. Asia Forest Network.

Banerjee A K. 1987. *Microplanning—a Tool for Social Forestry Implementation.* New Delhi: National Wastelands Development Board, Government of India. pp. 36.

Bartlett A G, Nurse M C. 1991. *A Participatory Approach to Community Forestry Appraisals.* Technical Note No. 2/91. Nepal: Australia Community Forestry Project. pp. 21.

Chambers R. 1988. Notes of the PRA Workshop at IDS. UK: Institute of Development Studies.

Correa M. 1995. Gender and Joint Forest Planning and Management - A Research Study in Uttara Kannada Distt, Karnataka. Dharwar: India Development Service. pp. 119.

D'Arcy Davis Case. 1990. *The Community's Tool Box. Community Forestry Field Manual 2.* Rome: FAO. pp. 146.

Dani A A, Gabriel C J. 1996. *Sustaining Upland Resources People's Participation in Watershed Management.* Occasional Paper No. 3. Nepal: ICIMOD. pp. 99.

Dhar S K. 1994. *Rehabilitation of Degraded Tropical Forest Watersheds with People's Participation.* JFM Series No. 16. New Delhi: TERI. pp. 24.

Dhar S K, Gupta J R, Madhu Sarin. 1991. *Participatory Forest Management in the Shivalik Hills: Experiences of Haryana Forest Department.* Sustainable Forest Management Working Paper No. 5. New Delhi: Ford Foundation. pp. 37.

Ford Foundation. 1995. *Proceedings of the Seminar on Joint Forest Management - Strengthening the FPCs.* Calcutta: Ford Foundation. pp. 73.

IIED. 1997. PLA Notes - Methodological Complementarity. No. 28, February 1997. London: International Institute for Environment and Development. pp. 102.

Karnataka Forest Department. 1996. *Joint Forest Planning and Management in Karnataka—Formation of Village Forest Committees.* Bangalore: Karnataka Forest Department. pp. 75.

Kaul O N, Dwivedi B N, Shah V. 1995. *Ecological Revival of Haryana Shivaliks through Community Participation.* JFM Series No. 17. New Delhi: TERI. pp. 21.

Mehta V, Vardhan R. 1996. *Microplanning in Joint Forest Management.* Proceeding of the National Workshop on Microplanning in JFM, 1995. New Delhi: TERI. pp. 75.

McCrackan I J. 1992. *Natural Forest Management—Field Manual for Community and Private Forestry in Nepal.* Field Document No. 22. Nepal: Forest Department. pp. 73.

Moench M. 1991. *Training and Planning for Joint Forest Management.* Sustainable Forest Management Working Paper No. 8. New Delhi: Ford Foundation. pp. 20.

Molnar A. 1989. *Community Forestry—Rapid Appraisal.* Rome: FAO. pp. 90.

National Wastelands Development Board. 1991. *Guidelines for Microplanning.* New Delhi: National Wastelands Development Board, Government of India. pp. 51.

Poffenberger M. 1990. Joint Management for Forest Lands: Experiences from South Asia. New Delhi: Ford Foundation. pp. 49.

Poffenberger M. 1990. *Keepers of the Forest - Land Management Alternatives in Southeast Asia.* USA: Kumarian Press. pp. 289.

Poffenberger M. 1991. *Joint Forest Management in West Bengal: The Process of Agency Change.* Sustainable Forest Management Working Paper No. 9. New Delhi: Ford Foundation. pp. 14.

Poffenberger M, McGean B. 1993. *Upland Philippine Communities: Guardians of the Final Forest Frontiers.* Res. Network Report No. 4. California: Centre for South Asia Studies. pp. 66.

Regional Wood Energy Development Programme. 1988. *Planning Forestry Extension Programmes.* Field Document No. 8. Bangkok: Regional Wood Energy Development Programme in Asia, FAO. pp. 199.

Regional Wood Energy Development Programme. 1991. *Local Organisations in Forestry Extension in Asia.* Report of a Regional Consultation. Field Document No. 30. Bangkok: Regional Wood Energy Development Programme in Asia, FAO, pp. 13.

Roy S B. 1994. *Joint Forest Management—A Training Manual.* Forest Studies Series No. F-1, New Delhi: IBRAD, Inter-India Publications. pp. 223.

Roy S B, Chatterjee M. 1994. *Joint Forest Management—A Training Manual.* New Delhi: Inter-India Publications. pp. 223.

Scott C, Gupta J R. 1990. *Forest Resource Conservation and Development Plan: Shivalik Hills.* Sustainable Forest Management Working Paper No. 6. New Delhi: Ford Foundation. pp. 23.

Singh B. 1993. *Hand Book-cum-Training Manual on Community Participation and Microplanning for Management of Common Lands in Aravallis.* Consultancy Report. EEC. Haryana: Haryana Forest Department. pp. 87.

Singh B, Arora S S, and Gupta J R. 1993. *Management of Bamboo Forest under Joint Participatory Forest Management in Haryana Shivaliks.* JFM Series 6, New Delhi: TERI. pp. 20.

Singh R. 1991. *Managing the Village Commons.* Proc. National Workshop on Managing Common Lands for Sustainable Development of our villages. 15–16 December 1991, Bhubaneswar. pp. 138.

SPWD. 1993. *Guidelines for the study of Community Institutions in Forest Management.* New Delhi: Society for Promotion of Wastelands Development. pp. 51.

SPWD. 1993. *Joint Forest Management Update*. New Delhi: Society for Promotion of Wastelands Development. pp. 185.

Suess W. 1995. *How Joint is Forest Management in the Actual JFM Implementation?* Observations on some selected cases in Udaipur District, Seva Mandir, Udaipur. pp. 132.

TERI. 1995. *Baseline Survey of Forest Resources under JFM*. Proceedings of the Training Workshop for Forest Guards and Block Officers of Haryana Forest Department, September 1995. New Delhi: TERI. pp. 33.

TERI. 1995. *Baseline Survey of Forest Resources under JFM*. Proceedings of the Training Workshop for Forest Guards and Block Officers of Haryana Forest Department, October 1995. New Delhi: TERI. pp. 31.

TERI. 1995. Training Workshop on Construction and Maintenance of Dams under JFM for HFD Staff, December 1995. New Delhi: TERI.

VIKSAT. 1993. *Joint Participatory Forest Management—An Implementation Manual*. Ahmedabad: VIKSAT. pp. 56.

INDEX

Action plan 2, 5
Afforestation 16, 57, 60
Agricultural
  wastes 75
  yields 58
Agriculture 23
Analytical tools 21
Aravalli hills 24, 91, 94
Area identification 54

Bageshwar Forests (Uttar Pradesh) 44, 45
Bamboo poles 56
Base maps 35, 64
Baseline
  surveys 25, 28, 34, 54, 55, 67
  survey data 39, 70
Bhabbar grass lease 76
Biogas 75
Biomass 1, 7, 23
  assessment 39
  quadrats 38
Boundary demarcation map 49
Boundary line 48

Case studies 18
Cattle production 56
Causal diagram 16
Chandrapur (Maharashtra) 99
Checklists 12, 13, 18
Chemical pollution 58
Civic facilities 77
Communication skills 7
Communities 2
Community
  development 9
  forest project 51
  meetings 70
  motivator 7
  objectives 61
  participation 4, 8
  profile background sheet 14
  resources 3
Cow dung 75
Cropping pattern 75

Dam
  catchment 61
  construction 60
Data collection 16, 54
Deforestation 58
Degraded forests 2, 30, 34
Demographic
  characteristics 14
  data 26, 53, 82
Demographics 23, 25, 27
Density classes 32
Development
  cycle 51
  priorities 6
  schemes 79
Diagnostic review 24
District Rural Development Agency 64
Drinking water 56, 78
Dupinga (Philippines) 19

Economic stratification 73
Ecosystem 53
Employment pattern 74
Equitable partnership 1
Extension skills 7

Farm trees 75
Farming community 56
Fires 57
Flow diagram 16
Fodder 56, 75
  grass 25, 32
  grass lease 76
  trees 57
Forage condition 33
Forest
  area 30
  communities 1, 2, 85
  degradation 12, 24
  ecosystems 15
  field staff 2
  fires 58
  lands 2, 33
  management 2, 4, 7
  products 14, 20, 61, 76
  protection 25
  resources 1, 2, 12, 13, 23, 55, 59, 76
  types 34
  use 12
Forest protection committee (FPC) 18, 38, 40, 42, 47, 48, 55, 61, 62, 71
Foresters 9
Forestry staff 7, 26, 40
Fruit trees 56
Fuel sources 75
Fuelwood 56

Gamtalao (Gujarat) 18
Geographic information system (GIS) 59, 64
  GIS maps 81
  GIS mapping tools 65
  GIS sheets 81
Government funds 13
Group discussions 12

Hand pumps 78
Harda (Madhya Pradesh) 67
Histogram 18
Horticulture 23
Hydrology 14

Illicit cutting 57
Information
  analysis 13
  collection 12
  review 11, 12
Infrastructural development 56
Irrigation potential 33
Irrigation water 56

Joint forest management (JFM) 1, 2, 4, 7, 30, 38, 40, 47, 61, 69
  JFM areas 40, 41
  JFM programme 3, 8, 12, 24, 25, 43, 50, 53, 56
  JFM process 50
  JFM sites 26
Joint management unit (JMU) 61, 67

Karanji seeds 55
Kedarpur Dam 36
Kharaya gum 55
Khod, Aravalli hills 91
Knowledge
  local 3, 4
  transfer 8

Land holdings 75
Land-use 14, 19, 30
  pattern 23, 64, 70
  planning 1
  transects 14, 17
  zones 15
Lifestyles 9
Limbi (South Gujarat) 55
Line transect walk model 16

Line transects 37
Listening skills 9
Livestock 23
  population 74
Local communities 1, 7
Lunavada Taluk (Gujarat) 41

Maharashtra 99
Mahila Mandal 18
Mahua
  flowers 55
  seeds 55
Management
  area 40
  issues: NAM SA (north Thailand) 58
  objectives 54, 57
  operations 6
  partnership 38
  plans 2
Maps
  base 28
  command area 26, 33, 36
  forage condition 32
  forest condition 30, 32
  location and base 26
  management 26, 34, 35
  resource use 30, 31
  revenue 28
  social 26
  soil erosion 33, 34
  village/*shajra* 33
  village 26, 28
Mapping 16
  participatory 28
  exercises 34
  forage 32
  future scenario 16
  mobility 16
  resource 30
  sketch 40
  social 16
Medicinal plants 57
Micro-watershed 3
Microplan 2, 4, 5, 6, 40, 47
  beat level 87
  document structure 68
  forest protection committee level 88
  format 53, 80
  implementation 61
  map 64, 71
  preparation 53
  ratification 61
  action plan 71
Microplanning 1, 2, 3, 13, 28, 30
Mobility maps 15
Modelling 16
Mohrali (Maharashtra) 99
Motivation process 40

Nada range (Haryana) 20
National forest policy (1988) 1, 6
Natural resources 3, 5, 25
Nested quadrats 37
Non-governmental organisations (NGOs) 14, 43, 47, 48, 53, 56, 57, 67
Non-timber forest products (NTFP) 23, 24, 25, 55

Open grazing 57
Open wells 78
Overgrazing 58

Panchayati Raj grant 64
Participatory planning 4, 13, 50
Participatory approach 8, 10
Participatory management 10, 24, 52
Participatory management agreement 61
Participatory methods 13
Participatory microplanning 1, 2,7, 50
Participatory monitoring and evaluation (PME) 48
Participatory process: microplanning 54

Participatory rural appraisal (PRA) 12, 13, 22, 30, 57
  PRA exercise 14, 16, 18, 23, 24, 26, 28, 34, 43, 54, 70, 99
  PRA tools 18, 55
  PRA data 23
  PRA methods 23, 69
Participatory sketch mapping 25, 26
Pasture development 60
Pinjore division (Haryana) 20
Planning process 2, 3, 4
Preference ranking 16
Prempura forest seat (Haryana Shivaliks) 31, 49
Problem analysis 56
Profile sheet: *van panchayats* 44, 45
Public health 78

Quantitative survey methods 22

Range profile 40, 41
Ranking
  direct matrix 20, 21
  guidelines 20
  methods 21
  pairwise 16, 21
  preference 21
  strengths 21
  voting 16
  wealth 16, 21
Reserve forest 46
Resource
  data information 83
  development 2
  management 2, 42
  management agency 38
  maps 24, 26, 55, 71
Resource management society (RMS) 30, 38, 40, 47, 48, 55, 61, 62, 71
  RMS area maps 66
Revenue maps 12

Sampling survey 57
Seasonal calendars 15
Secondary data 18
Semi-structured interviews 16, 18, 21, 22
Silvicultural practices 69
Site-specific microplan 54, 57
Sketch mapping 26, 54, 70
Social composition 73
Social forestry 8
Social groups 53, 58
Societies Registration Act (1860) 48
Socio-economic data 26
Soil conservation
  structures 61
  measures 57
Soil erosion 33, 58
Solar cookers 76
Stakeholder analysis 55
Survey sheets 12
Sustainable management 1, 2, 4, 8

Tendu leaves 55
Timber species 56
Time lines 14, 18, 19
Time trends 14
Toposheets 11, 64, 71
Topographic surveys 11
Topography 11, 14, 34
Transect 15
Tree quadrats 38
Tree species 20, 39

Umaria division (Madhya Pradesh) 42
Usufructs 3
Uttar Pradesh 43

Van panchayat villages 43
Van panchayat forest 46
Van panchayats 44, 45
Vegetation survey 25, 34, 37
Village cadastral maps 12

Village communities 2, 12, 25, 59, 67
Village Damdama, Morni, Pinjore Division (Haryana) 29
Village forest areas 28
Village forest committee (VFC) 38
Village Ghata Sher (Aravalli Hills) 17
Village Ghodbar (Gujarat) 20
Village institutions 78
Village level action plan 2
Village map 14
Village Mogi Nand (Haryana) 20
Village Nada, Pinjore Division (Haryana) 27
Village Nandpur (Haryana Shivaliks) 16
Village nursery 57
Village profile 13, 24, 72
Village profile sheets 25, 26
Village Rajipur, Pinjore range (Haryana) 39
Village resources 23
Village *shajra* 12

Water dam system 61
Water distribution systems 57
Water harvesting dams 33, 34, 57, 77
Water quality 58
Watershed management programme 64
West Bengal 40, 50, 52, 82, 83, 85, 87, 88
Working plan (WP) 1